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NOTICE TO BINDER.

Volume LIII has been issued in two parts, each containing the "Journal" proper paged with Arabic figures, and "Extracts from the Proceedings" paged with Roman figures. This title and contents should be placed first, and be followed by pages 1 to 200, then by pages 201 to 424. After that should come "Extracts from the Proceedings," pages 1 to lxxx, and lxxxi to cxlv, concluding with the Index.

JOURNAL

OF THE

ROYAL HORTICULTURAL SOCIETY.

VOL. LIII. PART I. 1928.

THE GARDENS AT CAMPSEA ASHE.

By the Right Hon. VISCOUNT ULLSWATER, G.C.B.

THE original house of Campsea Ashe was built in 1585 by a Mr. GLOVER, and although there are no records available I have no doubt that he surrounded it with a garden, which, like the house, received additions as the years rolled on. It may therefore be safely asserted that there has been a garden here for some 340 years. The rectangular pieces of water suggest a Dutch origin and were probably made about 1680, and originally intended for fish ponds or stews. Three avenues of limes, horse-chestnuts and elms respectively radiate from the house across the park. The first two appear in an old map dated 1838, but the last, which is not shown therein, must have been planted subsequently. About the year 1700 the estate passed into the hands of the SHEPPARD family, who held it until 1882, and it is to the foresight and taste of members of that family that their successors owe the enjoyment of many of the beauties of the place.

The chief features of the garden are the majestic cedars (figs. 1, 2), the tall yew fences (figs. 3, 4), and the gay borders (figs. 5, 6). The big cedars, ten in number, stand on the lawn close by the house. At what date were they planted? There are unfortunately no records known to me which throw any light upon this question. Mr. BEAN once told me that they were the finest cedars he knew in England. I suggested, in reply, that possibly he had not seen all the cedars

in the country. Perhaps he only wished to be complimentary. At all events they make a fine collection and, on the whole, have not suffered excessively from their chief enemy, snow, though I can well remember Christmas morning, 1886, when 100 limbs lay on the lawn, the result of a blizzard on Christmas Eve. The tallest of the cedars measures 106 feet; the largest in girth, measured at 5 feet from the ground, is 21 feet 4 inches; the smallest is 15 feet 4 inches. Nine of them have splendid straight trunks, running up some 20 or 30 feet before throwing out any side branches; one alone has three huge limbs, which start from the level of the ground and lie over each other like gigantic boa-constrictors.

At Blenheim I have seen and measured some larger cedars, and so I have had to yield the palm to the DUKE OF MARLBOROUGH. He dates his at about 1750. I should have put them earlier; but, at all events, I expect that the Campsea Ashe cedars were planted at about the same period, the poor soil of Campsea Ashe accounting for a slightly less magnificent development of growth than the richer and more humid soil of Blenheim was able to produce. When the old house was rebuilt about 1870 by Mr. J. G. SHEPPARD, its former owner, the mistake was made of building the south wing in too close proximity to the cedars, with the result that the windows on that side are somewhat darkened by the thick canopy of the trees, some of which stand within 40 feet of the south door. Their presence there also forbids the use of the south wall for tender climbers, the sun being practically excluded; but on the west front we are able to grow with success *Ozothamnus rosmarinifolius* (Snow in Summer), *Sophora viciifolia*, and *Clematis Armandi* amongst other commoner climbers.

The yew fences were probably planted about the time of WILLIAM and MARY, and conform to the pattern of the pieces of water. They suggest the formal type of garden which was then in vogue. There are altogether about 600 yards of yew fence, mostly from 15 to 25 feet high and 8 to 10 feet thick, which present a formidable proposition when the time comes for their annual shingling. Many of them retain their wall-like perpendicularity, but the most effective one is a long fence of 150 yards, which bellies out here and recedes there, showing graceful and interesting variations of shape and colour, especially in June before the green has assumed a monotonous hue.

Opposite the west windows is an old bowling green of oval shape (fig. 7), surrounded by a thick wall of yew, in which strange protuberances occur, caused probably by slight annual variations in clipping, and accentuated by the lapse of time. This encircling wall of yew is divided into four segments, and in each segment there are five shaped summits, of which no two are alike. It is a problem, hitherto unsolved, as to what these lumps originally represented or whether they represented anything at all. Suggestions have been made that they represented the wigs of the bench of bishops, the letters of the Greek alphabet, a set of chessmen, and so forth. They are probably the twentieth-century results of neglected seventeenth-

century topiary work, but whatever their original intention the general effect is strange, picturesque and unique.

At a more distant spot, beyond the Walled Garden, is a colonnade of clipped yews, no two of the columns being of the same girth, though they are joined together at the top with an entablature of yew. The whole forms a sort of Stonehenge in green (fig. 8).

The Stone Garden adjoining is oval in shape, with twelve tall untrimmed yews of varying dimensions standing at regular intervals round the oval. In the centre is a marble statue of Apollo, raised on a low mound of stone, and from the centre to the foot of each yew tree is a path of stone slabs, giving the effect of a starfish or, to use a more prosaic metaphor, a cartwheel, the space between the spokes being filled in with the ordinary blue-grey stone used for metalling roads before the days of tarmac (fig. 9).

A small grove of tall and well-feathered ilex trees produces a sombre and mysterious background against which a couple of white marble figures, flanked by a pale-grey willow and a fine group of *Bambusa anceps*, stand out in prominence. Here too is a small sunk garden (figs. 5, 11) surrounded by a low brick wall with a crazy pavement round the central piece of water, at each corner of which stands a dwarf Japanese tree. The garden is in two terraces, filled with ivy-leaved Geraniums in two shades of pink with purple Clematis trailing along the brickwork. This spot offers also an opportunity for showing off some fine Italian vases in metal, a handsome seat in carved stone, some Japanese metal cranes, and a couple of cannon balls rescued from the galleon which sank in Tobermory Bay when the Spanish Armada was wrecked on the west coast of Scotland.

On the other side of the bowling green is a Rose Garden, where the usual Wichuraiana roses flourish, entered under a Japanese *torii* bearing the inscription in Japanese "The house of Lowther welcomes you." The inscription naturally conveys nothing to most visitors, though one of them, who happened to be a Japanese scholar, once detected that the inscription had been erected upside down!

Beyond the Rose Garden we come to the Rock Garden, a sheltered sunny spot, seen at its best in May or June, where flourish a certain number of alpinas, *Myosotis azorica*, diminutive Dianthus, thymes, *Zauschneria* (very late flowering but very attractive), the dwarf Fuchsias *microphylla*, *pumila*, *reflexa* and *procumbens*, *Erica* 'St. Keverne', several varieties of Primula, *Salvia officinalis* and *Sedum coeruleum*, a pretty little importation from Algeria. In the centre stands a group of Yuccas and Phormium, which never fail to make a good show. The whole is surrounded and protected by a thick wall of Bamboos (*Anceps*), but *Qui custodiet custodes?* They spread so freely and grow so strongly that they become enemies rather than friends to the denizens of the Rock Garden.

On the other side of the cedars from the house stands the Walled Garden, dating from the time of Queen Anne, originally doubtless

devoted to fruit and vegetables, now given up to flowers and bisected by a broad gravel path. Here Lady ULLSWATER gives free play to her love of colour, especially by massing it, and has arranged a series of borders of various hues—red, yellow, mauve, purple and blue. Along one of the paths running parallel to the centre path is a large collection of various Dahlias, including 'Salmonia,' 'Polar Bear,' 'Prince of Wales,' 'K. J. Jackson,' and 'Gustave Doleen.'

These popular plants seem to flourish very well in the climate and soil available here, and, as we are only able to enjoy the garden in the late summer and autumn, they are particularly welcome.

Beyond the Walled Garden, and close to the yew colonnade already referred to, is a very attractive little formal garden of heliotropes (fig. 6), standards of 'Mme. de Bussy,' rising up from thick beds of 'Lady Minto' and 'Mrs. J. W. Lowther' (awarded a Certificate of Merit in 1913). They scent the air for quite an appreciable distance and satisfy the eye by their lovely colour and the huge size of their blooms.

Amongst the rarer trees and plants growing in and about the Walled Garden are a *Caesalpinia japonica*, which only occasionally shows racemes of its splendid yellow orchid-like inflorescence, *Buddleia Colvillei*, which annually produces its pink evil-smelling flowers, *Physostegia* or "Hinge plant" (a curiosity), a few *Lilium giganteum* of which great things are expected, a bed of deep-red Veronicas, preserved through the winter with much difficulty, and some good shrubs of blue Hibiscus. There is also a small collection of choice Montbretias, including 'His Majesty,' 'Star of the East,' 'Joan of Arc,' 'G. Henley,' 'Una,' and 'Nimbus.'

The red and white borders on either side of the gravel path and some 60 yards long are edged with a dwarf Geranium, 'Shrubland Pet,' and a Verbena, 'Sutton's Scarlet.' Behind these may be seen *Alonsoa Warscewiczii*, *Coreopsis atrosanguinea*, and Antirrhinum 'Fire King.' A wealth of colour is produced by *Salvia coccinea*, *Lobelia cardinalis*, *L. fulgens* and *L. Huntsman*, Dahlias 'Indian Chief' and 'Coltness Gem,' Pompon Dahlias 'Border Perfection' and 'Bacchus,' *Cacalia coccinea* (the Tassel flower) and *Nemesia strumosa* 'Fire King,' whilst at the back is a hedge of *Artemisia lactiflora*, behind which towers *Bocconia microcarpa*.

In the blue border Nemophila and Delphinium 'Butterfly' (a dwarf but very effective and showy plant) form the edging. Behind them are *Browallia elata*, *Nigella*, *Anchusa* 'Sutton's Blue,' *Aconitum bicolor*, *Commelina*, *Anagallis*, Cape Forget-me-not, *Salvia patens*, *S. farinosa* and *S. uliginosa*, *Platycodon grandiflora*, *Stachys* 'Silvercloud,' *Lobelia syphilitica*, *Perowskia*, *Ceratostigma plumbaginoides*, *Pentstemon heterophyllus*, with cornflowers to fill in the gaps. On the old red wall behind the border are Ipomoeas and a few shrubs of blue *Hibiscus syriacus*, whilst *Solanum crispum* climbs up and over the top.

The mauve border is composed of Phlox 'Paul Bert,' *Scabiosa* 'Azure Fairy,' *Ageratum*, *Pentstemons* 'Royal Lavender' and 'King



FIG. 1.- CEDARS AND BOWING GREEN AT CAMPSEA ASHT.



FIG. 2.--CEDARS AT CAMPSEA ASHE.

George,' *Arctotis grandis* and the 'Lace flower' *Didiscus coeruleus*, an effective edging being made up of Viola 'Maggie Mott.'

In the purple border *Verbena venosa* plays a large part, and behind it rise *Pentstemon Kellermannii*, Phlox 'The Mahdi,' *Lobelia grandis*, and *Senecio* 'Jacoby' (a purple variety). The bed culminates in a Dahlia, 'Mizpah Mimms,' a full and large-flowered Dahlia, not everybody's colour, but it makes a fine display.

The last border to which I need refer is the yellow border. Some sunflowers, *Solidago* 'Golden Wisp,' *Rudbeckia speciosa*, and *Newmanni* stand at the back; along the front are *Inula ensifolia*, *Tagetes*, and *Calceolaria amplexicaulis*, the intervening space being filled up with *Antirrhinum* 'Yellow Queen,' *Coreopsis Drummondii*, *Zinnia* 'Stately Queen,' Pompon Dahlias 'Lady Penzance' and 'Opal,' *Calendula* 'Orange King,' *Oenothera missouriensis*, *Matricaria* 'Golden Ball,' *Statice Bonduellii* and *Helianthus cucumerifolius*. In all her borders Lady ULLSWATER's aim has been to fill the beds in such a way that no soil should be visible, and in this she has been most successful, for the plants merge one into the other and entirely conceal the ground from which they spring.

Before leaving the Walled Garden it is necessary to spare a few words for a very fine example of *Berberis vulgaris*, the common Barberry which overhangs the iron gates of the entrance. It is almost a tree, is graceful in form, and in the summer has long drooping branches of yellow flowers which, as the year advances, change into white and then red fruit. *Bambusa anceps*, protected by the wall, flourishes abundantly and throws out long plumes of gracefully descending foliage. Sometimes this bamboo suffers from the cold N.E. winds which blow here in the spring, but it soon recovers and regains its beauty.

On the lawn outside the Walled Garden stands a fine specimen of the Copper Beech (fig. 10) together with an old Mulberry and a tree of *Cellis occidentalis* (Hackberry).

A piece of water, some 200 yards long, 20 yards broad, and 3 to 4 feet deep, divides the garden into two unequal parts (fig. 3). The water goes by the somewhat prosaic name of "the Canal," but it is better than its name. When viewed from an angle at either end it is most attractive; the straight lines of masonry at the water's edge, of the sloping grass bank, of the gravel path, of the base and of the top of the long yew fence converging in the distance make a pleasing picture, which is enhanced by the Water-lilies on the surface of the water, the tubs of bright scarlet *Geranium* reflected in "the Canal," and the classic busts on their pedestals (collected in Italy by Lord LONSDALE about 1850), which are niched along the long yew wall.

Crossing the water by a ferry-boat and penetrating through the yew wall, the visitor is brought in face of a double pink border, terminating in a rustic seat overgrown with the rose 'Mermaid' between two clumps of *Romneya Coulteri* and two of *Clerodendron foetidum*. The pink and white border is composed of Phloxes, such as 'Frau Buchner,'

'Pantheon' and 'Mme. Paul Dietric,' Pentstemon 'Fair to See,' Gladiolus 'Pink Beauty,' *Browallia elata alba*, pink Antirrhinums, *Statice Suworowi* and *sinuata rosea*, to which Dahlia 'Loveliness' forms a good background. In front is an edging of an ivy-leaved mauve Geranium, which Lady ULLSWATER found whilst motoring through France. There is also a fine specimen here of *Ceanothus papillosus*, quite a tree. *Artemisia Baumgartenii* also makes a fine display of silvery foliage.

Parallel with the border, and running at the back of the tallest plants on the right-hand side, is a rustic pergola, the posts of which are completely hidden by a very sweetscented and showy Honeysuckle *Lonicera flava* or *aurea* (fig. 12). The cross-pieces of the pergola are covered with Clematis of some six or eight varieties, and at the far end of the pergola is a double fence of Lavender, the delicate colour of which harmonizes admirably with the purple Clematis and yellow Honeysuckle. There is another sheet of pink and white flowers lying to the right of the pergola in which may be found a dwarf Pentstemon, our own seedling, various pink Dahlias, the best of which is the small 'Dunally,' Clarkia 'Salmon Queen,' and the diminutive *Rhodanthe maculata*. Beyond that we find a small Rose Garden backed by some medlar and apple trees, Magnolias and Staphyleas. A long straight path, with a Fuchsia fence on either side, divides this portion of the garden from the orchard and leads through a little gateway at the far end into the shrubbery. The orchard is not wholly utilitarian, for it allows some flower schemes to lodge within its borders. Near the mulberry trees is a little group of orange-coloured flowers; there is a long border of *Rudbeckia Newmanni*, a bed of *Physalis Bunyardi*, besides a collection of duplicates for cutting as required.

Along the outside fence is a row of posts on which the climbing roses make a fine show, and a cross path has many varieties of Michaelmas Daisies and half a dozen different vines, encircling as many pillars. Passing through a small gateway, a brick path leads down the shrubbery, where I have formed a small collection of more or less interesting shrubs. Amongst the former I may mention a good specimen of *Pyrus* \times *purpurea* (a joy in flower as in fruit), a small tree of *Plagianthus Lyalli*, some *Xanthoceras*, which flowered very well this year, about a dozen varieties of Berberis, *Osmanthus ilicifolia*, some *Exochordas*, a considerable number of the best varieties of Lilac, a young tree of *Halesia tetraptera*, two or three bushes of *Rosa sericea pteracantha* with their bright scarlet spines, some Pittosporums and two good Japanese maples, which turn to a brilliant yellow and a deep red in autumn. Some clumps of *Antholyza* and *Hypericum patulum* and a big plant of *Rubus ulmifolius* give splashes of colour at a time when the shrubs are not in flower.

The remainder of the garden is occupied by a large lawn tennis and croquet lawn, with a short avenue of walnuts on one side and a screen of 'Grüss an Teplitz' Roses on the other. Tubs of Hydrangeas and Agapanthus mark the alignment of the paths, and tubs of an orange

Geranium with a background of tall yew fences flank the approach to the front door, which is also the place from which to say "Adieu."

As to the general climatic conditions, our rainfall during the last five years has averaged 26·63 inches. It will be increased by this year's downpour, which has already (August 25) reached 23·34. During the spring the N.E. wind blows very cold across the North Sea (only some nine miles away). Shrubs and plants are therefore late in moving, but, *per contra*, last well into October. The frosts are not very severe, though I have known the thermometer very near zero on one occasion, and then we lost all our Veronicas. The soil may be described as a layer of loam over a subsoil of uncompromising clay. The difficulties of gardening are therefore not inconsiderable, but fortunately they are counterbalanced by a liberal allowance of sunshine in an ordinary year.

SUGGESTIONS TO AMATEUR EXHIBITORS.

By A. J. COBB, A.U.C.R., F.R.H.S.

FIRST I would quote the Royal Horticultural Society's definition of an amateur for the purpose of exhibiting at their Shows.

It is a person who does not gain any part of his livelihood by growing for sale, or for an employer, flowers, fruit, vegetables, plants, seeds, grafts, cuttings, bulbs, buds, etc., and is not in the employ of a nurseryman.

Any objection raised as to the qualifications of an exhibitor shall be referred to the Council of the R.H.S., whose decision shall be final.

This definition is no doubt well known to exhibitors and possible exhibitors, but my object in mentioning it is to explain that many amateurs are owners of very fine gardens, themselves often keen horticulturists who have the assistance of some of the most highly skilled gardeners in the country. Few will question that the combination of such employers and men has played a very big part in bringing British horticulture to the proud position it holds to-day.

It is not to such men that I am here to give "Suggestions to Amateur Exhibitors." I wish that to be clearly understood, and for the purpose of my remarks the word amateur must, primarily, be taken as meaning an exhibitor who is perhaps not a highly skilled grower, or who is at any rate one who has something to learn about exhibiting.

There are, of course, many highly skilled growers among what I may term the small amateurs. They are found frequently among men who have taken up the cultivation of some particular flower or class of plants, and to whom it is an absorbing hobby. We are all familiar with such men. We find them devoting much of their spare time, and some of their money, to the cultivation of, it may be, Roses, Sweet Peas, shrubs, hardy plants, alpine, or even some of the old-fashioned flowers such as Pansies or Border Carnations.

It does not, however, necessarily follow that a skilful grower is always a successful exhibitor.

It often happens that when a man has fallen to the seductive charms of this most delightful of all hobbies, that he is anxious to test his skill in friendly rivalry on the show table. The Amateur Show held in the R.H.S. Hall in June provides such an opportunity not only to its many Fellows but also to non-Fellows, who are equally eligible and welcomed.

I propose dealing with my subject under three headings, viz. :

- (1) A brief survey of certain classes in the schedule.
- (2) A few cultural hints.
- (3) Cutting, packing, and exhibiting.



FIG. 3. -THE TERRACE WALK AT CAMPSHA ASHE LOOKING NORTH.



FIG. 4.—THE TERRACE WALK AT CAMPSEA ASHE LOOKING SOUTH.



FIG. 5.—THE SUNK GARDEN AT CAMPSEA ASHE.



FIG. 6.—THE HELIOTROPE GARDEN AT CAMPESEA ASHE.



FIG. 7.- INSIDE THE BOWING GREEN AT CAMPSHA ASHT.



FIG. 8.—YEW COLONNADE AT CAMPSFA ASHE.

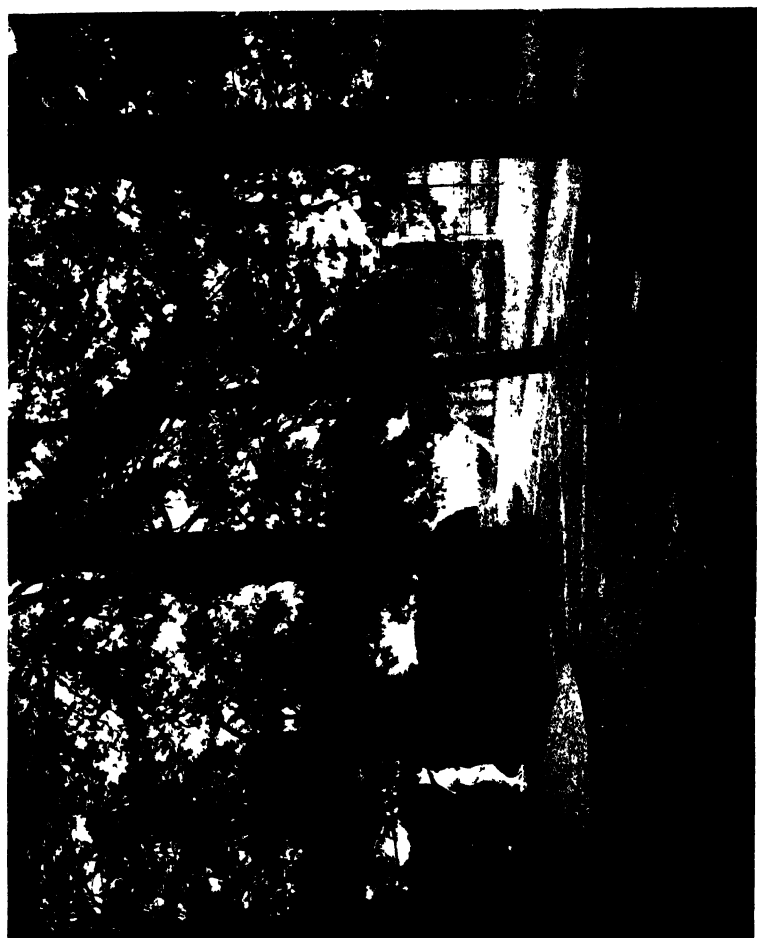


FIG. 9.—THE STONE GARDEN AT CAMPSEA ASHF.



FIG. 10.—OUTSIDE THE WALLED GARDEN AT CAMPSHA ASHLE

Passing over Class 1 for a group of plants, Roses rightly take a prominent place by being given the next six classes.

In Class 2 one of those problems which sometimes confront exhibitors is solved by admitting the Pernetianas with the Teas and H.T.'s. It is unfortunate that the National Rose Society does not make the definition clear and stick to it by placing every variety now in commerce in its proper class and adding to it any new variety as it comes along. This would save confusion, as it is rare to find in the catalogues of Rose specialists agreement on certain varieties, one listing a variety as a Pernetiana and another the same rose as an H.T.

The N.R.S. might even give the lead by having a class for Pernetianas at its shows. A few of the best should undoubtedly be included in the exhibit. The colours are so beautiful and striking and would carry weight with the judges. Many of them, though glorious in colouring, are a bit thin or not full enough for strong competition. Varieties should therefore be chosen from among the fuller forms, some of the best of which are 'Golden Emblem,' 'The Queen Alexandra,' 'Florence Izzard,' 'Souvenir de Georges Pernet,' 'Souvenir de Claudius Pernet,' and 'Mabel Morse.' Of the H.T.'s one would not go far wrong in choosing varieties of 'Ophelia' type, with its well-formed flowers, long stems and healthy foliage. These points are important when exhibiting in vases. Such varieties as 'Mrs. Henry Morse,' 'H. F. Dreer,' 'Rev. F. Page Roberts,' 'Lady Inchiquin,' 'Columbia,' 'Covent Garden,' and 'Madame Butterfly' suggest themselves.

There is a class for Wichuraiana Roses, a type of rambler which is immensely popular. Possibly nothing gives such a bright display throughout the country for a limited time as this type of Rose. It is thus well worth the distinction of a class to itself. There are two distinct groups of Wichuraianas; one, the varieties of which are too late flowering for the Show under consideration, and of which the popular 'Dorothy Perkins' with its trusses of small rosette-like flowers may be given as an example. The other varieties are mainly early flowering, commencing about the middle of June. It is from this group that sprays will be obtained for exhibiting at the Amateur Show.

The flower trusses in this early group differ from the late. The flowers are generally large, flattish when open, and with about four to eight blooms on a truss. Varieties which readily come to mind are 'La Perle,' 'Alberic Barbier,' 'René André,' 'Paul Transon,' 'Gardenia,' 'Edmond Proust,' 'Desiré Bergera,' 'Dr. Van Fleet,' 'Alexandra Tremouillet,' 'François Guillot,' 'Leontine Gervais,' 'Diabolo,' 'Joseph Lamy,' 'Joseph Billiard,' 'François Juranville,' 'Jean Guichard,' and 'Emily Gray'; the last named has beautifully formed flowers more like a Tea Rose, and is perhaps the best yellow Wichuraiana.

In the class for climbing and for rambler Roses, excluding the Wichuraianas, the Multifloras will play a part by the aid of such

varieties as 'Blush Rambler,' 'Tea Rambler,' 'Mrs. F. W. Flight,' 'Psyche,' 'Tausendschon,' 'Hélène,' 'Seagull,' and 'Phyllis Bide,' the last a variety of recent introduction.

Several other types can be drawn from, including the Noisettes with such varieties as 'Rêve d'or,' 'Bouquet d'or' and 'Claire Jacquier'; the Ayrshires; the Boursalts; the beautiful Bracteata hybrid 'Mermaid' would provide a strong vase. Any of the climbing varieties of H.T.'s would be permissible cut as sprays, distinct from their dwarfier relatives, which would be shown as single blooms on a stem.

A class for the charming singles has been included, and here the exhibitor can go almost round the garden for eligible examples, for it does not matter to which class they belong, whether it be Species, Wichuraianas, H.T.'s or what not so long as they are single. Charming varieties are 'Isobel,' 'Irish Elegance,' 'Irish Fireflame,' 'Princess Mary,' 'Mrs. Oakley Fisher,' and 'Simplicity.' The popular 'Moyesii' should be shown if possible, 'Austrian Copper' also, and perhaps the most striking vase would be set up with 'Dainty Bess.' Those who saw the last when exhibited as a new seedling in 1925 are not likely to forget it. Several pretty singles are to be found among the Penzance hybrids and the Wichuraianas. Sprays with quite young blooms should be chosen, as all single forms are more difficult to get to the Show safely than fuller ones, and in all cases extra sprays and spare varieties should be taken to make good possible losses.

Advocates of the old box system of exhibiting Roses—and it cannot be doubted that this is the best way of showing the qualities of a fine flower—will be pleased to see a class for them. To be successful it will probably be necessary to have some of the well-known exhibition varieties to choose from, such as 'Frau Karl Druschki,' 'George Dickson,' 'J. G. Glassford,' 'Mrs. Henry Morse,' 'Mrs. Henry Bowles,' 'Gorgeous,' and 'Mrs. Charles Lamplough.'

The last class for Roses in Division A is for Dwarf Polyanthas in pots. There are plenty of varieties to choose from, and they are easily grown. Varieties giving a wide range of colour should be exhibited if possible. 'Ellen Poulsen,' 'Orleans Rose,' 'Coral Cluster,' 'Yvonne Rabier,' 'Gwyneth,' 'Eblouissant,' and 'Orange King' would meet such a condition.

Delphiniums and Sweet Peas can be passed over for the moment, but reference may be made to the class for Hardy Flowers.

There is a wealth of lovely things to draw on here, and at a time when the garden should be gay with many kinds and varieties. Quality both in kind and variety should be aimed at. Among many good things in season, the following are good: Lilies, Delphiniums, Lupines, Achilleas, Campanulas, Papavers, Geums, Erigerons, Pæonies, Pyrethrums, Irises, Eremurus, etc.

The next class is for "Annuals."

For some reason, possibly our old bogey the weather, they have not been shown as largely as one would have expected.

At many provincial Shows annuals constitute one of the most

popular features. Some of the most beautiful are not perhaps easy to pack and get to show without damage, the dainty and beautiful *Salpiglossis* being an example. Nevertheless, if cut when blossoms are dry and care taken in packing, this difficulty can be overcome.

A good collection could be chosen from the following kinds : Larkspurs, Lupines, Clarkias, Chrysanthemums, Godetias, Sweet Peas, *Salpiglossis*, *Lavatera*, *Acrocliniums*, Marigolds, Poppies, *Nigella*, Zinnias, *Coreopsis*, *Phacelia*, *Nemesias*, *Verbenas*, and ten-week Stocks.

Lovers of "Hardy Shrubs," and they are now almost legion, have an additional class allotted to them ; these classes are among the most popular in the schedule. It is a little late for many popular shrubs, but there is quite a good selection to choose from, which should be in flower round about the Show date. The educational value of such exhibits should be considerable, as so many people are always on the look-out for beautiful and suitable subjects to plant which will continue the flowering season after the Lilacs, early *Spiraeas*, *Berberis*, *Exochordas*, Cherries, Crabs, etc., have finished.

A selection can be made from among the following :

Magnolia parviflora and other species.

Cornus florida, *C. Kousa*.

Styrax japonica.

Deutzia scabra, *D. longifolia* and its variety *Veitchii*.

Rhus Cotinus.

Philadelphus in variety, viz. *purpurea* 'maculata,' 'Virginal,' 'Conquetti,' 'Fantasie,' 'Bouquet Blanc.'

Spiraea ariaefolia.

Escallonia langleyensis, *E. edinensis*.

Potentilla fruticosa, *Olearia macrodonta*, etc.

From the very favoured parts, such as Cornwall and Devon, we may expect many beautiful things not included in the above list.

The beautiful and fashionable *Rhododendron* is also specially catered for by the provision of a class for species and another for hybrids.

The increasingly popular genus *Iris* will not, at the end of June, have a fair chance of showing its wonderful possibilities, as most of the good things will be over. Where collections of species and varieties are grown there will be sufficient to select from, and as any will be eligible there ought to be some interesting collections staged.

The old Border Carnation, once so popular, has been somewhat under a cloud since the wonderful rise of the Perpetual to fame. There are signs of a revival in its popularity. Exhibitors should endeavour to stage blooms representative of all types, such as the Clove, Selfs, Yellow Ground Fancy, White Ground Fancy, and the true Fancy, the last being a flower having two or more colours, provided they are not yellow or white. In the classes for Pinks, Selfs, Fancies, and Laced forms should be shown if possible.

A class has been added for six pots or pans of Alpines in flower in Division A. The date of the Show is a bit late for a wide choice, but a selection can be made from *Campanulas*, *Sedums*, *Saxifrages*, *Primulas*, *Aethionemas*, and *Dianthus*.

Ferns are given two classes, one of them for British Ferns. It is surprising that these beautiful plants are not more generally grown, and possibly the Amateur Show will do something to encourage their extended cultivation.

Flowering plants in pots are given several classes. Kinds will no doubt be chosen primarily from typical greenhouse plants such as *Begonias*, *Gloxinias*, *Streptocarpus*, *Carnations*, *Fuchsias*, *Lilies*, *Hydrangeas*, *Pelargoniums*, etc. Beautiful annuals can be used if necessary, since the schedule does not ask for greenhouse plants.

In the classes for Foliage Plants in pots, choice will depend on facilities for cultivation. Some of the more beautiful require more heat than is generally given nowadays, particularly *Alocasias*, *Marantas*, *Caladiums* and *Crotons*. *Coleus*, *Dracaenas*, *Aralias*, *Palms*, *Grevillias*, and *Rex Begonias* will no doubt figure largely.

A FEW CULTURAL HINTS.

Having touched on a few points in the schedule, I will now give "a few cultural hints," and it will be obvious they must be few.

Assuming that suitable kinds and varieties are chosen, the next point will be to grow them to as near perfection as possible.

A certain amount can be done by skilful exhibiting to make up for lack of quality, but if an opponent has quality and displays skill in setting up then the inferior-quality exhibit must certainly lose. To advise good exhibiting unless one has the high-class material to exhibit, is analogous to the advice so freely given of late years to grade and pack English apples better so as to compete with the attractive and well-packed imported fruits.

Our first lesson has been to grow more first-grade fruit, and I am glad to say the lesson has been learnt to a great extent, and until we did that it was not much use to talk about better grading and packing.

To take *Roses* first. The foundation of success will have been laid by having healthy plants growing in well-prepared soil.

Skilful pruning, control of pests, feeding and watering and timing the blooms will all play a part. The *Ramblers* will have been pruned long ago, and good sprays can only be expected from well-ripened growths.

Dwarf Roses of the *Tea*, *H.T.* and *Pernetiana* types are pruned between the middle of March and the second week in April.

Fairly hard pruning will be necessary, and the resulting shoots restricted to the strong healthy ones; all weak growths should be pinched out early, as they would not produce first-class blooms and would obstruct light from the others. If there be any idea of the soil



FIG. II.—THE SUNK GARDEN AT CAMPSEA ASHE.



FIG. 12.—THE HONEYSUCKLE PERGOLA AT CAMPSEA ASHE.

[To face p. 13]

being acid this should be corrected by a dressing of fresh-ground lime at the rate of about $\frac{1}{2}$ lb. to the square yard.

The effect of a dressing of lime on an acid soil is often magical in its results on growth.

After pruning, a top-dressing of partly decayed farmyard manure with a sprinkling of bonemeal and burnt ash will supply all the food required by the Rose. If the soil has been limed, a few weeks must elapse between that and giving farmyard manure. One hesitates to recommend watering; a surface mulch is often an effective substitute, but I would not say watering is unnecessary. We often get a very dry spell in May and June, and as this is a critical time for growth, I should prefer to feel that the soil was watered if necessary, taking advantage of the opportunity for applying a few doses of liquid manure water. The final application of manure should take place as the first row of petals begins to unfold.

Early in June a sprinkling of muriate of potash or Peruvian guano may be given at the rate of an ounce to the plant.

Even with this attention good blooms will not be obtained unless pests are kept down. Aphides and caterpillars of various moths are the worst offenders. We all know what a mess the former will make of the buds and leaves, and the disappointment felt on finding what appeared to be a fine bud spoilt by the activities of a caterpillar.

Delphiniums.

Wonderful Delphiniums are now grown and shown by amateurs. The best spikes are generally obtained from plants which have been established at least a year.

Reducing the shoots to not more than three to a plant is imperative, doing this when the growths are 5 to 6 inches high. Good deeply dug soil well manured is necessary for the production of fine show spikes, but perhaps water is more so; in fact it might be termed the secret of success, and must certainly be given if the soil be in any way inclined to be dry. Real soakings must be given, alternating pure water with applications of manure water. A sprinkling of an artificial fertilizer such as guano at the rate of an ounce to a plant should be applied about the middle of May. This combination will work wonders, and by its means only can fine spikes with large blooms of good colour be obtained.

Sweet Peas.

Coming to Sweet Peas, there seems less necessity for advice about them than almost anything in the schedule, because perhaps when a person gets the Sweet Pea fever he straightaway sets to work on well-known exhibition lines by growing plants on the single stem system, a system by no means decorative from a garden standpoint, but essential if prize blooms are to be grown. An early start is now considered essential, by sowing seeds in pots or boxes in early autumn, the first week in October being generally favoured, so as to get strong, well-rooted plants ready to plant out in early April. Deep

cultivation and the soil enriched with very decayed manure, and an addition of phosphates and potash are other important factors. Lime, too, must on no account be overlooked, if necessary.

Previous to setting out the plants the dressing of phosphates and potash may be given in the form of sulphate of potash and bonemeal, 1 lb. of each to 20-foot run of row.

From the time of planting, the plants will require almost constant attention in the way of tying to stakes and confining each plant to two cordon-like shoots, by pinching out all side shoots and tendrils.

Feeding may begin about a month before the date of Show by giving another dose of potash and an occasional watering with liquid manure and soot. No manure of any sort should be given the week previous to showing, as this may tend to cause the flowers to lose freshness and colour when placed in water. The amount of water will depend on weather and soil. On a heavy soil one application a week may be sufficient, while on soil of a lighter character twice a week may be necessary. To conserve moisture and to keep soil cool a mulch of some substance such as peat moss litter, partly decayed leaves or lawn-grass clippings should be placed alongside the rows.

Blooms must be removed regularly until three weeks before date of Show.

Quality should be the first aim, size next, for a large good bloom is better than a small good bloom; on the other hand a small good bloom is better than a big bad one. It is possible to get stems too long, because frequently in such cases the blooms are not well placed on the stems—12 inches to 15 inches is long enough, with four perfectly coloured flowers well placed on a stem.

Hardy Flowers.

Work in connexion with these will depend on various factors. The basis of success will in many cases have been laid by giving the plants a good start in a satisfactory rooting medium. The subjects to be grown will in many cases demand individual treatment. A good vase of one of the many species of *Lilium* should be included if possible. A choice could be made from *L. monadelphum Szovitsianum*, *L. testaceum*, *L. Krameri*, or even the old garden favourite *L. candidum*.

Eremurus, too, would score heavily. Such plants as *Lupines* and *Chrysanthemum maximum* may require thinning, and watering would be essential in all cases if weather necessitates it.

Hardy Annuals.

With the possible exception of Sweet Peas, annuals have not until recent years received the proper attention which they undoubtedly deserve. Dozens of them are beautiful, yet, possibly because the seed

of most of them can be obtained so cheaply, little attention was paid to the preparation of the ground. In many cases soil was lightly forked and scratched over and seed sown thickly, and the plants left to take care of themselves.

That is in direct contrast to the preparation which I observed being made a few weeks ago for a border of annuals.

The ground was being double dug and a good dressing of manure added. Under such conditions it can be expected that the plants will withstand drought if necessary and make specimens, from a good strain of seed, true to kind and variety. In the case of half-hardy kinds it will be necessary to have good plants ready to plant out in May. The hardy kinds can be sown *in situ* if desired, but many of them will repay sowing in frames or boxes and pricking out, if only to escape the danger of slugs, and to enable the planting to be done when weather and soil are favourable.

Other points to observe are, staking according to the habit of the plants, keeping the soil stirred around them, and, if really necessary, watering well.

Carnations.

Show blooms will probably be obtained from plants which commenced to bloom in early spring, not from those which have been flowering all the winter in pots. Where the plants are growing in borders or on benches—the system almost entirely adopted by the market grower—flowers could be expected at any time from healthy plants.

Most amateurs, however, grow Carnations in pots. Close attention to details will be necessary if first-class flowers are to be obtained. These are, growing the plants during May and June under cool conditions, disbudding, feeding carefully with organic manures, and, above all, keeping the plants clean and free from pests.

Border Carnations have perhaps been largely superseded by the Perpetuals, nevertheless they are still popular; they are quite worth growing in pots, and for the date of the Show this will perhaps be necessary to ensure getting blooms in time. Layers are frequently potted into small pots when well rooted in September, kept in frames during the winter, and planted out in spring. A batch should be potted into 5- or 6-inch pots and flowered in a cool greenhouse. A compost of good fibrous loam with some lime rubble, burnt ash, bone-meal and a little dried cow manure, and the plants potted firmly would provide ideal conditions. A sharp look-out should be kept when preparing soil to make sure it does not contain any wire-worms.

Hardy Pinks, like other members of the *Dianthus* family, enjoy a good loamy soil with a fair amount of potash and lime mixed. They also revel in sunshine.

It will be noticed that disbudding is not permissible and full blooms are asked for.

Violas.

Violas are extremely popular, and to grow well must have a good soil enriched with manure, bonemeal, and lime. Cuttings struck early last autumn or September and wintered in frames should be planted out as soon as possible, if not already done. Violas are free flowering and commence producing their buds early. These should be removed till plants are strong, and later, faded blooms regularly, or all buds kept off till within three weeks of Show. Exhibitors in Division C have a chance of showing the fine old Pansy, and it would be interesting to see a collection of these beautiful old flowers. They are well shown in the North and Midlands, and I have no doubt are equally well grown in the South by enthusiasts.

Culture similar to that of the Viola will suit the Pansy. On newly broken up soils wire-worms are serious enemies to the Viola and Pansy.

Antirrhinums.

The popular Antirrhinum is given a special class. Many people sow seed in early autumn. Plants from such sowings would be now sturdy little specimens and of course ideal. Seed sown the first week in February (not later), and the seedlings given proper attention, should have fine central flower stems ready by the Show date. It is generally necessary to have the central spike for competition.

Antirrhinums respond exceedingly well to pot cultivation. Firm potting or planting in a soil containing lime is essential for healthy development of the plants.

Pæonies.

Pæonies ought to provide a good show, as it is their "season." The most important point in the cultivation of Pæonies is to remember that they are gross feeders and are capable of taking up quantities of manure. The feeding roots are close to the plant, and as a top-dressing stable manure should be placed so that the roots can get full benefit. Plants have to be established a year or two before giving the best results.

With some varieties disbudding is necessary, and it should be done early.

Flowering Plants in Pots.

In addition to special classes for Orchids, Gloxinias, Begonias, Fuchsias, and Ferns, there are classes for "Flowering and Foliage Plants in Pots" in each Division.

The above named will doubtless form part at least of the collections, and can be added to from the kinds previously mentioned.

Gloxinias and Begonias require somewhat similar treatment. To get good plants by the end of June, bulbs, preferably two years old,

must be started in heat in early March and kept growing in a fairly warm, moist atmosphere. A suitable compost would be good fibrous loam, peat or leaf soil, cow manure and sand. Begonias will probably commence flowering too early, and all buds must be picked off till within six weeks of the Show.

Streptocarpus are lovely and should be included. Plants raised last year and partly rested during the winter must be given a gentle start, and repotted into 5- or 6-inch pots in a similar mixture to that recommended for Begonias and Gloxinias.

Achimenes belong to the same order as Gloxinias and are charming plants; they are not, of course, grown as individual plants, 7 to 10 in a 6- or 7-inch pot being usual, and so grown they make fine specimens.

Hydrangeas are easily grown; plants with about three good growths and terminal flower buds must now be brought from cool winter quarters, repotted and started in moderate heat.

Those who prefer blue flowers to the natural pink should try watering with aluminium sulphate at the rate of 2 oz. to 3½ oz. in a gallon of water. Plenty of manure water is essential.

Heliotrope plants in pots are popular and easily grown. Cuttings struck in heat in early March should be potted on as fast as necessary, and pinched twice to induce dwarf, bushy plants. The Heliotrope quickly fills its pots with roots, and must never be allowed to suffer from want of water.

Well-grown Carnations, not too tall, with healthy foliage and four to six good blooms to a plant would appeal.

Should the foliage not give the typical healthy colour and bloom, give a little sulphate of potash and liquid manure; on the other hand, if growing too freely at the expense of buds, a little phosphate of lime would help.

Zonal Pelargoniums are not grown so much as formerly, but are still favourites of some people. Cuttings struck last August would make good flowering plants by June in 7-inch pots. Two pinchings would be necessary, and flower buds kept off till within six weeks of the Show.

Calceolarias, once so well grown, are rarely seen at Shows except from a few of the big trade firms.

The herbaceous forms are handsome, though not perhaps everybody's flower. The newer hybrids are particularly graceful and dainty and more easily grown than the large-flowered type. They are raised from seed, and this should be from a good strain. Important points are not to let the seedlings or plants wait a day before pricking off or potting when ready; they must be grown somewhat cool and a watch must always be kept for their worst enemy—Green Fly.

Ferns.

The best time to attend to Ferns in the way of top-dressing or potting is in spring. Vegetation is getting active then, and the plants

grow away, even if repotted, almost without a check. Shade and moisture and a suitable stimulant when well established sum up the salient points in their culture.

The class for a hanging basket of plants ought to bring out something effective and original. It is seldom one sees much break-away from the stereotyped few plants.

Charming baskets could be made with *Fuchsia* 'Coralie' and several other *Triphylla* hybrids, with *Gnaphalium microphyllum*, a graceful grey-foliaged plant. Begonias of the Lloyd type, Calceolarias of the dainty hybrid section, and Achimenes all suggest themselves. More use might be made of the *Nephrolepis* ferns, especially the variety *exaltata*, to enhance the floral effect. The baskets must be lined with moss and a suitable soil mixed, using it as coarse as possible, good lumpy fibrous loam being necessary and more decayed manure than is usually given to the same class of plants when growing in pots.

FINAL PREPARATIONS.

(Cutting, Packing and Staging.)

The two weeks previous to the Show will be a period of considerable anxiety. Fears that some subjects will not be ready and that others will be over are bound to be felt. Certain things must not be left to chance unless one has plenty to choose from.

Of course the weather will play a very important part in hastening or retarding the blooms.

Shading.

Shading of certain flowers will be advisable, and sometimes essential. Sweet Peas in the orange shades must be shaded, for although some varieties in that colour group do not burn or scorch as much as some of the older varieties, yet they all do more or less, and it would be unwise to leave them to chance. Shading well above the blooms with a light scrim material will protect them sufficiently from the sun, which we may expect to be powerful around the Show date. Pansies are benefited with a shading of thin fabric a few days before the Show, and so are some Carnations.

Roses, too, must be carefully watched, in fact some colours must be shaded if the colour is to be preserved from scorching or bleaching.

Many of the Pernetianas are offenders in this respect, especially the flame colours, but most Roses of vermilion and rich rose tints are liable to bleach if the weather happens to be hot, and we all know how difficult it is to get a good crimson to retain its rich colouring. That unfortunate fading to a dull plum or purplish hue can be at any rate lessened by shading. The shading of the Rose must not be of the same character as for the Sweet Pea. Blooms only must be covered, leaving the foliage to get all the sunlight possible. For shading there is perhaps nothing better than the well-known conical shades which can be fixed at any height above the flower.

It must, however, be remembered that shading is only to be done if absolutely necessary, for in these Islands even towards the end of June old Sol may be too sulky to display himself much.

It must be regarded as one of those details which many will not bother about, but which may mean the difference between winning and losing. In many competitions this may not represent a wide margin, but the extra care may prove sufficient to make that difference.

Timing the Flowers.

This is another of the little worries attendant on exhibiting, and will to a great extent be dependent on the weather, at any rate for those plants which normally flower about the Show date.

Pinching off the blooms and buds of flowers which commenced blooming too early must cease in time to avoid risk of not having plenty to choose from, and with Roses in box and vase classes of H.T., etc., disbudding must be done; the latter also applies to Carnations, but not to Pinks.

Sometimes little or nothing can be done to hasten or retard blooms.

Tying Buds.

With the Roses a process which will slightly retard and at the same time improve the blooms is "tying the buds."

This is not usually done except for box classes, but if time allows it would be time well spent to do a lot of blooms for vase classes.

This is done when the first row of petals has unfolded. The tie should be made round the middle of the bud.

The best tying material is that known as budding cotton, a very soft kind of worsted. The tie must be made above the unfolded row of petals and round the centre of the buds. Pieces of cotton about 9 inches or 10 inches in length should be used. In tying merely give the first knot a double twist and leave it at that. As the bud increases in girth the ends will yield to pressure and prevent any contraction of petals.

The advantages of tying buds are that it steadies development of flower, helps to increase length of petal and building up with a good conical and pointed centre, and of course keeps a bloom beautifully clean.

Watering.

This is one of the last operations, and if necessary must be given to plants within a day of cutting.

Cutting.

The best time for cutting outdoor flowers of any kind during summer is very early in the morning. This applies particularly during very hot weather. During the night the flowers will have had time to

recover from the effects of heat. It is not, however, always possible to cut at the best time. If one is travelling to a Show in the afternoon or evening it would then be best to cut in early morning rather than during the day, even if time permitted.

Blooms for show should be chosen with great care, keeping in view quality all the time. The flowers should be cut in a sufficiently young state according to the time which has to elapse between cutting and exhibiting.

Before cutting commences tins or vases should be in readiness filled with water so that the cut stems can be immediately placed in them. A cool rather airy room away from sunshine is necessary, but light need not be excluded as is sometimes done.

This applies to all flowers.

All flowers should be cut and placed in water a few hours before being packed, and unless it is absolutely impossible to avoid it gather blooms when dry. The length of time which some flowers should have in water will vary. For instance Sweet Peas, generally, ought to have several hours, but the lavenders and blues seem to improve in colour if cut and placed in water some time beforehand. In the case of Pæonies, to obtain the best colour it is often necessary to cut in a partly opened state, as some colours such as pinks lose their delicate tints if allowed to open in sun. The whites are of course all right, and strong reds are not liable to fade. Cut just as first outer petals begin to unfold and roll back. If cut earlier they may refuse to open.

The stems must be put in water immediately; this is vitally important.

Special mention may be made of Roses.

For exhibiting in the box classes it will be necessary to have boxes and boards ready and tubes filled with water. Wires will be required to mount each bloom as it is cut. Leave the tie on and place immediately in the tube.

Take care not to damage perfect leaves, and do not be tempted to use foliage of other varieties than of the Rose being shown.

Having cut your best dozen and arranged them by placing the largest at the back, though as near a balanced set should be obtained as possible—lighter shades at ends and yellows well apart—place at once in the cool room.

It will be absolutely necessary to take spare blooms to the Show, and if a second spare box can be put up at home, to choose from when finally setting up, it will be better than taking blooms packed in boxes.

It seems a lot of trouble to take an extra box, but it might easily mean the difference between the first prize and no prize at all.

The boxes are usually mossed: this gives a cool appearance; only good green moss should be chosen, free from leaves and little sticks.

In cutting for the vase classes, cut long stems, but avoid cutting into two-year-old wood, as it would then be more difficult to draw up moisture.

In selecting Roses for the vase classes, H.T., etc., though size combined with quality will count, I think perfect blooms according to the variety, even if not so large, would be seriously considered by the judges.

Good foliage, long stalks, and fairly long blooms will catch the eye.

Ramblers.—Cut long stalks so as to show the true character of the variety, remove a few lower leaves, and place deep in water before packing.

Aim at freshness in all flowers. In the case of *Ramblers* and *Wichuraianas*, the removal of the old blooms, and where the pollen has dried and turned brown, its removal also will do wonders in freshening up.

Delphiniums will take up a lot of water ; a few of the lower leaves can be removed and the stems placed in fairly deep tins or vases previous to packing. To guard against any possible danger of breaking the stems and to keep them rigid a tip not generally known is to run a piece of galvanized wire up the inside hollow stems. The same would apply to *Lupines*.

Pansies require especial care. As each bloom is cut the stem must be placed in water ; if left out even for a short time stalks become filled with air and the edges of the petals may curl up.

Having cut all flowers, on no account be tempted to spray them over, no matter what sorts they are ; this is a mistake often made by amateur exhibitors, and it cannot be too strongly condemned. Damp flowers will not travel well, and they often lose colour in addition to getting damaged, and the petals lose substance.

Packing.

Next comes the packing—a very important matter. The same care, or even more, is necessary as for packing choice flowers for market. Many flowers which have taken a year to produce have lost 50 per cent. of their value for market by unskilful packing.

Our leading market growers, who realize the vital importance of this, are past masters in the art of packing.

The same fate may easily befall the exhibitor ; the flowers at home are obvious winners but when unpacked equally certain losers.

How can this calamity be avoided ? Many of our regular large trade exhibitors take their flowers to the Show in water by the aid of deep boxes made light by having sides and top of canvas. A holed board is fixed a few inches from the bottom in which tins or vases are held, and the flowers thus travel upright. This would not be practicable for such things as *Delphiniums* and other long-stemmed plants, but for *Roses*, *Sweet Peas*, etc., it is ideal.

This is, however, unusual for the amateur, who has to rely on packages and cases. Light but strong boxes, such as are used by

market growers, will be found as good as can be obtained. Every package should be neatly lined with clean white paper.

A number of sticks the exact width of inside of box must be got ready by wrapping round with soft paper. These are for the purpose of keeping each layer of blooms and stems tightly in position. The first stick will be required for the purpose of supporting the first layer of flowers. In the case of Roses and Carnations this would be just at base of blooms or capsule. Having placed the first layer in position, it is kept there by means of a cross stick and also acts as support for next layer.

When tying Roses in bunches, as is sometimes done for vase classes, it will be better to wrap each bunch in tissue paper and lay in the box.

Sweet Peas are often done in the same way, and some growers wrap each stem separately.

Long stems like Delphiniums will need a kind of rest or rack on which spikes can rest and to which spikes can be tied, one tie being fairly near the top to prevent "kinking."

Flowers like *Chrysanthemum maximum* should be wrapped to the top; wherever it can be seen that a wire would assist in keeping stems in their natural positions, providing these can be put on without being seen, there is no objection to it.

Antirrhinums are a case in point. The top of a fine flowering spike is very liable to curl upwards when packed flat. This might be avoided by a neat florist's wire fixed right to the top of the spike.

This could well be left on when finally arranging, but if there is no danger of top curling then it would be better to remove the wire.

The packing being finished and cases labelled, the greatest possible care should be taken in transporting them from home to the Show; a very watchful eye will be necessary if transit is by rail.

Arrival at Show.

Immediately on arrival at the Hall find out the positions of the classes in which you are exhibiting and place your packages near them.

The next thing is to procure vases, fill them with water and commence to unpack the kinds which would take most harm if left too long in their packages.

A few vases in excess of the number actually required in the exhibits will be necessary.

Arranging Flowers.

For flowers such as Sweet Peas, Roses, Carnations and many others it will be essential as an aid to "setting up" to have something in the vases to help support the stems and to enable the exhibitor to place flowers exactly where wanted. One of the most popular subjects for this is the Sedge or Rush Grass which grows in most damp and boggy places. This should be cut slightly shorter than the vases, so that when inserted it does not show above the rim. Stems of fine

Michaelmas Daisies are often used. Anything will do that will answer the purpose if it can be quickly arranged. Time is often an important factor when exhibiting.

Now comes the actual arranging of the flowers. This cannot, I fear, be taught by talking about it. Whenever possible a trial test should be made at home, not only for the purpose of individual arrangement but to test the grouping of the set of vases. One of the finest lessons is, of course, to visit a few Shows and observe the methods of successful exhibitors.

It is also difficult to advise on colour arrangement. The aim should be to place each vase so that it serves the dual purpose of showing the flowers it contains to the best advantage and assisting its neighbour to do likewise.

This is generally best done by means of pleasing harmony rather than by strong contrast. The latter style is seldom effective when viewed close to the eye, as is usually the case on the Show table.

Staging.

In placing the vases in their allotted spaces give each vase sufficient room to show off the true beauty and habit of the flower. I am afraid this will depend on the amount of space at the disposal of the Society, but I am sure every consideration will be given and forethought used in the allotment of space for each class.

Sweet Peas should stand just clear of each other ; in fact everything should, though it is more important with some subjects than with others.

It would be impossible to show the grace and elegance of Wichuraiana and Rambler Roses unless space is allowed for the natural habit to be seen. H.T. and similar Roses would not be enhanced by open spaces between them. At one time a considerable amount of "dressing" was done to exhibition Roses, but very little is done nowadays, exhibitors relying more on the judges' knowledge of the blooms. Of course a certain amount can be and is still done when showing Roses in boxes. Faulty petals should be removed from any flower if the exhibitor is sufficiently adept at doing it without damaging the bloom.

When showing plants in pots the same care should be taken over details. It is not uncommon to see unsightly stakes and plants not neatly tied where tying is necessary ; this should be done skilfully and neatly and so as not to interfere with the natural habit of the plant. All pots should be perfectly clean, and where possible hidden by moss or some other suitable material.

Labelling.

As each exhibit is completed the labelling should be seen to. This if correctly and neatly done will add largely to the interest and educational value of the exhibit.

In the case of some flowers, such as Sweet Peas, Roses, Pansies and Violas, if the setting up is completed some little time in advance of judging it is a good plan to place clean tissue paper lightly over the flowers for the purpose of keeping them fresh and possibly to shade from sun. This would be removed when the order is given for exhibitors to leave the Hall.

One final word of advice.

Amateurs so often make the mistake of "feeling their way," and, after having arranged and set up, often have to rearrange. The best advice I can give is to try to win as you go; in other words, to be quite satisfied with each vase when you have once finished it.

You should try to grow well and stage well.

In addition there are two other cardinal points which all exhibitors must learn if they are to get any real pleasure out of exhibiting, they should first learn how to win, but they must also learn how to lose.

MINIATURE DAFFODILS.

By Mr. P. R. BARR.

[Read at the Daffodil Conference, April 13, 1927.]

I APPREHEND that miniature Daffodils will appeal only to a certain section of the community, more especially to those who are fond of high alpenes and who are interested in rock gardens, for they are essentially subjects for that phase of gardening. In the rock garden one can select the various aspects and provide the various soils which these little bulbs require. They are all very hardy, being denizens of the mountains and upland pastures and cool pine woods, and in some cases they include species specially adapted for semi-bog gardens.

The most interesting is *Narcissus cyclamineus*. It is extremely striking and quite distinct in form from any other Daffodil. Notice its perianth reflexing closely over the ovary—it reminds one of the ears of a rabbit flying back. It is purely a marsh plant, and if you will allow me I will read a letter which my father wrote when he found this Narcissus, because he was the first one to discover it in any large quantity. It was mentioned in Rudbeck's "Theatrum Florae," and this is the plant which Dean HERBERT wrote of in the following language in his "Amaryllidaceae," 1836: "It is another absurdity which will never be found to exist." The worthy Dean, however, proved to be wrong in this respect, because after a long period, about 250 years, it was found by Mr. JOHNSON and the late Mr. ALFRED TAIT (Baron DE SOUTELLINHO) in marshy ground in Portugal. My father, as I say, found it in large quantities in marsh land. He wrote of it as follows:

"I see a letter in *The Garden* in which the writer complains that he cannot keep alive *N. cyclamineus*. It is not so here. The bulbs of it which I got two years ago have flowered twice, and this last spring were more perfect than in 1889. Some of them were planted in a deep crevice in the rockery, others in a very damp bottom at the back of a north-west wall, others in the frame in pots; they all did well. Those in the rockery have given a large crop of seed, which I have sowed in pots of pure loam.

"In Spain and Portugal where I met with *N. cyclamineus* it was growing on the margins of mountain streams or in the flooded meadows adjoining, and nowhere else; and the wetter the situation the finer the flowers and the larger the bulbs. In one instance I found a colony on a little islet in mid-stream. I also found it growing on little elevations near to the stream, and in such places the plants were weak and the bulbs small. Often I met with the bulbs on low banks where they had been washed down. I have gathered it in the water of the stream, being attracted by the greater size of flower. The illustration

(in *The Garden*) referred to by 'G. H. E.' was made by Mr. MOON from a description verbally furnished, and those who know the spot well consider the sketch as good as if it had been made on the spot. The miserable specimens referred to as growing in my nursery were in too dry a situation. A bed in a damper part of the nursery was a picture for at least two months. *Narcissus cyclamineus* and the Hoop-Petticoat Narcissus have a preference for wet places. Often have I waded ankle deep for them, and then washed my boots and stockings in the mountain stream to get rid of sand and mud."

So you see it has been found growing quite as an aquatic. I should say that a very suitable position for such a plant is down in the basins which one makes at the foot of rocks, and where you can produce semi-bog conditions. The late Mr. J. G. BAKER of Kew told me that he looked upon *Narcissus cyclamineus* as a very ancient type of Narcissus and one of the most interesting of the species.

Col. HARRIS. Is it a lime-hating plant, the *cyclamineus*?

Mr. BARR. I think it dislikes lime—certainly at some distance were limestone mountains.

Col. HARRIS. It grows near the water, close to the surface at Westeringham. I think it must be a lime hater. With us it has naturalized itself and sown itself in the moss under the trees, not in grass at all.

Mr. BARR. I should say it dislikes lime, because it grows so well in peaty bog.

Col. HARRIS. I gathered some flowers as tall as my umbrella.

Mr. BARR. I have seen it a foot high, not more.

Col. HARRIS. I have seen it three feet high.

Mr. BARR. The next I have here is *Narcissus Bulbocodium citrinus*. Certainly in very damp ground one has very much larger flowers than where you have it in a drier position. The plants shown were taken up at Taplow from a very damp gravelly slope facing south, but we have had them also in a drier position where the flowers were scarcely half the size. In the Western Pyrenees and along the Asturias Range the plant has been found in various sizes, small under drier conditions and very large in damp places. At Wisley it grows freely all over the place.

Mr. CHITTENDEN. We find that *cyclamineus* naturalizes itself in light woodland where it is damp; it springs up everywhere where the ground is moist and open, in the wood itself. *N. Bulbocodium* grows only in the open.

Mr. BARR. Here I have two forms of yellow *Bulbocodium*. This larger one grows in marshland or almost marshland under the same conditions as you will find *citrinus*. This smaller variety grows in pine woods. I cannot help thinking it is a question of the geographical position that has caused the different size of these plants. I have noticed this, that when it has been grown in very damp ground, you will get it as large as the old *Bulbocodium conspicuus*, which used to be so plentifully cultivated in the Channel Islands, where it has now

apparently died out. I do not think any nurseryman in the Channel Islands has any at the present time. At Penzance we get flowers of great size. I have picked them as large as any we used to have from the Channel Islands.

Both these forms of *Narcissus Bulbocodium* come from Portugal; the small one is akin to the old *Bulbocodium nivalis* or *tenuifolius*. I believe there are several other forms of *Narcissus Bulbocodium* to be found in the North of Spain and in Portugal, but they want a lot of looking for and the country is difficult.

There is also the *Bulbocodium monophyllum* or *Clusii*. This is the white *Bulbocodium* which comes from Algeria and Morocco. It is found in dry, gritty soil on rocky ground. It is a delightful little winter-blooming species, but seems to be rather a difficult plant to grow. I recommend it being grown in gritty soil in pots in a cold frame or at the foot of hot dry walls. Not all bulbs will flower the first year.

Now we come to the *Narcissus triandrus*. I have here five types. This is the typical form from the Asturias Range in the North of Spain, namely *triandrus albus*. It varies more or less in the length of the corona, which in some specimens is more globular than in others, and it is not so pure white as some of the Portuguese forms. This, which is much whiter than the Asturian form, was sent to me by a lady who collected it in Portugal up above the Douro. We have only a few bulbs of it, and as you will see it is fairly distinct.

The typical form from the North of Spain is found growing at an altitude of about 5,000 feet among the rocks in gritty soil.

MISS WILLMOT. It grows with me in grass and seeds itself.

MR. BARR. Here is the little *Narcissus triandrus concolor*—which has become a very rare plant. I do not know where it is to be found now, but the late Mr. CHARLES TAIT, who only died about a month ago, told me that he knew only of one spot where it grew, and that he was just harbouring that little colony, because he did not want it to be disturbed. It is a lovely little plant. I believe that Mr. ENGLEHART proved it to be a cross between the ordinary single jonquil and the white *triandrus albus*, and that he did at one time make the cross; so that it is evidently just a wild hybrid.

This is a rather poor specimen of *triandrus pulchellus*. When the flowers are fresh the perianth is primrose and the cup nearly white, thus reversing the arrangement of colouring which one generally finds in the Daffodil, namely a lighter coloured perianth than corona.

All the forms I have referred to are lovely little rock plants and some suitable for grassy slopes. In rockeries it is advisable when they are in bloom just to bed a little green moss round the plants to prevent the soil being splashed up by the rain and soiling the flowers.

Then we have this *Narcissus triandrus calathinus* from the Isle of Glennans. There has been a good deal written as to its origin, but it must have come from the Spanish mainland or from Portugal and, just as the yellow *Bulbocodium* got naturalized in the Channel

Islands and came from Spain or Portugal, you can understand that this plant somehow or other got established on the Isle of Glennans. One thing I regret to say, there are no plants to be found on that island now. Some years ago the sea washed over it—it is only a little rocky island—and after the water subsided a deposit of salt was left over the land and destroyed this beautiful little Daffodil. Some bulbs which were sent to me to see were charred as if they had been baked in an oven. Now we raise the plant from seed.

This is the true *Narcissus minor*. You will notice it has somewhat the shape of *maximus*, but in miniature. The trumpet opens well out and is deeply flanged.

This is *Narcissus nanus*, a dwarf plant with a somewhat similar bloom, but still different from the true *minor*, which is a scarce bulb at the present time. There is in Holland a plant which is very close to *minor* in shape, but it is a taller plant with a larger bloom and is not the true *minor*. I do not think anyone knows the history of *minor*; it is supposed to be a French plant, but we do not know. It has been said that *Narcissus Capax* is the double form of *minor*, but I do not think so, it has so distinct a colour.

This *Narcissus Capax* is the *Narcissus Ajax cystettensis* of HERBERT. It was HERBERT who made out that it was the double form of *minor*. PARKINSON figured it in his "Paradise," where he calls it "*pseudo-Narcissus gallicus minor flore pleno*," or "The Lesser French Double Bastard Daffodil." Certainly the figure he has in his book is this plant. He says it grew plentifully about Orleans in France. I have never been able to trace it in France.

Here I have two little species from the Pyrenees which grow there at an altitude of at least 5,000 feet, namely, *Narcissus moschatus* and *Narcissus juncifolius*. *Narcissus moschatus* is found on the Spanish side of the Western Pyrenees, the other side of Gavarnie. Mr. HENRY BACKHOUSE, who once saw it growing there, informs me that, although growing in very rocky and gritty ground, it gets a certain amount of moisture from a stream which trickles down the mountain. Otherwise in summer time on that side of the Pyrenees everything is pretty well baked up, quite different from conditions obtaining on the French side, where it is more or less cool and where there is a fair amount of vegetation.

Narcissus juncifolius is a lovely little plant and deliciously sweet-scented. It is found growing in the French Pyrenees at an altitude of 5,000 feet, and is quite a suitable plant for growing in your rock garden. It just wants to be planted and left alone. A charming little species allied to *juncifolius* is *rupicola*, but it is very scarce, and I have only had it from the neighbourhood of Escorial, near Madrid. The figure in the *Botanical Magazine*, t. 6473, seems to me to be only *juncifolius*. Figure A in plate xxvii of "The Narcissus," by BURBIDGE, is more like it in form. It is a dwarfer and more fragile species than *juncifolius*, and the flattened corona is nearly as wide across as the perianth segments.

You should select northern aspects for most of these little Daffodils. with the exception of *cyclamineus*, which, being almost a bog plant, will do well in a sunny situation.

I have one more plant here, a cross between the *Narcissus cyclamineus* and the Polyanthus Narcissus 'Soleil d'Or,' having a yellow perianth and a brilliant reddish-orange crown. The late Mr. ALFRED TAIT made the cross, and it is one you would imagine would not be very satisfactory; nevertheless, it is quite a strong-growing little plant, essentially good for rock work: it has a rich scent.

I think that Mr. R. O. BACKHOUSE would now like to say just a word about a few cultivated Daffodils suitable for rock gardens.

Mr. BACKHOUSE. Speaking on the subject of Narcissi in the rock garden, some of us are situated on soils in localities where these little things die out. I have had many of them, and I cannot get water just when I want it, and I soon tire of pumping. There are Narcissi, the hybrid ones, many of them of dwarf habit and bright colours, which look rather well on rockwork. I had one of Mr. ENGLEHART'S, 'Red Lady'; I grew it among all my other things and thought, "It is not big enough, it is a wretched little thing," but a lady suggested, "Why not plant it on the rockery?" We planted it on the rockery, and several people have said, "How beautiful that looks on the rockery!" It had looked nothing before. The same applies to some of the Poetorum crosses like 'Firelight'; they are bright yellow with very bright orange cups, and when you see them on a rockery they are very effective. I thought I would just put in this word so that those who do not care to grow these little cultivated Daffodils, or have difficulty in doing so, may not be disheartened, because such Narcissi on the rockery look very nice indeed. You do not see them much in shows: they are too narrow in the petal and they are too cheap: that is a great advantage, as in the rockery you must have them in sufficient number; it is no good having two or three only together.

Mr. BARR. There is one species I forgot, namely, the little *Narcissus dubius*; it is a very scarce little plant and is found growing not far from Montpellier. The finder states that it grows on rather dry, sunny hills in a clay calcareous soil, and requires a friable soil and a sunny position. It is a beautiful little plant. Perhaps Mr. BOWLES would say how it thrives with him.

Mr. BOWLES. This is out of my Crocus frame. When it was sent to me it was described as a delicate plant requiring protection. I have it on some rather high ledges of the rock garden where there are overhanging shrubs, and there it gets the drought which I imagine is necessary. I have raised seedlings from it, and they have done uncommonly well just sown in the ordinary border and left there alone. I cannot say it is such a tender plant; I think it is one of the most perfectly formed little white things that I know of.

This I gathered in Algiers a few years ago growing on rocks. It is a delightful little thing, and I am disappointed to find there is no record of it in the flora of Algiers. It is not *intermedius*, because that has

a semi-cylindrical leaf—this a large flat one. This is a seedling given me many years ago which came from the same batch as the charming 'Beryl.' It is most dainty; it was raised from *triandrus*, and a Poet. 'Beryl' is very beautiful, but it has got beyond the proper size for the rock garden.

Mr. ARKWRIGHT. This is a *juncifolius* crossed *triandrus albus*. I have three or four pots; it is in ordinary rocky soil with a slight mixture of peat.

The CHAIRMAN. I think it is one of the most beautiful plants I have ever seen: it has lovely colourings.

Mr. BARR. What name have you given it? You will join the two names together, perhaps?

Mr. ARKWRIGHT. I have given it no name, sir.

The CHAIRMAN. It is quite worthy of one.

Mr. JONES. If any of you have a root of *triandrus concolor*, do not let the sun get to it. I know of some in a pine forest which only see the sun in the early morning and late in the evening.

Mr. CHITTENDEN. Might I just add that these little Daffodils have one very good point beside those that have been mentioned—that is, they flower within three years of seed sowing. If the seed is sown as soon as ripe, you will find practically every seedling will bear flowers within three years, which is more than one can say of the large-flowered Daffodils.

[Mr. BARR illustrated his remarks by exhibiting the plants as he referred to them.]

MASTERS LECTURES, 1927.

THE PRESENT STATE OF KNOWLEDGE ON HYBRIDS
BETWEEN SPECIES OF FLOWERING PLANTS.

By Dr. C. H. OSTENFELD, Copenhagen.

[Read June 21 and 22, 1927; Dr. A. W. HILL, F.R.S., in the Chair.]

It took some time to select a subject which I thought would be of interest to your Society as the Masters Lectures, for I am not a horticulturist, but a pure botanist, whose lines are systematic and genetic botany; but at last I thought that some remarks on our present knowledge regarding hybrids between species of flowering plants would be of interest both from the horticultural and the botanical points of view. I wish, however, first to emphasize that it is not my intention to give any enumeration of species hybrids known nor to treat the subject from a systematic standpoint.

It has always been a matter of difficulty to answer the question: What is a species? I do not think that we shall ever reach a definition which satisfies all minds and all ideas, for the conception must be rather elastic. The old definition given by LINNÆUS ("Philosophia Botanica"): "*Species tot numeramus quot diversae formae in principio sunt creatae, quae formae, secundum generationis inditas leges, produxere plures, at sibi semper similes,*" has of course no value at the present day, when we all believe in evolution. We are, on the other hand, not much further forward than DARWIN, who in his "Origin of Species" says: "No one definition is satisfying to all naturalists; yet every naturalist knows vaguely what he means when he speaks of a species." This vague and indefinite statement, which may also be expressed by saying that *a species is a group of individuals which are all alike in most of their characters*, is in my opinion better than to try to reach more precision.

LORSY has tried to form better definitions when making the three terms *Linneon*, *Jordanon* and *Species*, three steps of which the first two broadly answer to the usual terms species and micro-species, while LORSY's "species" is the smallest systematic unit, often called the *genospecies*.

Such definitions are of certain theoretical value, but they do not make the matter clearer and are not practical, and I do not think that the creation of new terms, which do not bring us any practical step forward, is a good procedure. I am in agreement with the Danish geneticist, Ø. WINGE, when I keep to such a vague and wide definition of the species. It is much more practical to have a vague definition which every naturalist is able to use than to have a more restricted

and definite conception, because in the latter case we can only affix the word species to a group of organisms of which we know not only their morphological characters, but also their genetic behaviour; that means that we are only able to use it in some few and rare cases. I think you will agree with me that that would be a rather unpractical way to go.

If this were not the case, I should say that the definition recently given by C. C. HURST gives a good impression of a modern conception of the species. He said last year, in his Oxford lecture at the British Association, that "a species is a group of individuals of common descent with certain constant characters in common, which are represented in the nucleus of each cell by constant and characteristic sets of chromosomes." You see that this definition requires, besides morphological, both genetic and cytological knowledge. We shall return to that later on, but for the present I adhere to the vague definition.

The next point to make clear is, What is a variety? and Is there any *real distinction between a species and a variety*? The opinion on this question has oscillated from one extreme to another and is not yet definitely settled. The main difficulty is here the same as with regard to the conception of the species, namely the question of how we define a "variety." If we do not consider variations which are caused by the influence of external conditions and which are not inherited—such variations are nowadays mostly named *modifications*—we may define a variety as a *group of individuals which in one or a few characters (genetical factors or genes) differ from the species of which they are considered a variety*. When using this definition, a variety covers also such modern definitions as micro-species (at least for the greater part) and TURESSON's ecospecies, and also the lowest unity, the genospecies (i.e. LOTSY's term species); and the term gets thus a similar vague connotation as the species—with the same practical advantages and the same scientific defects.

The difference between species and variety is this, according to my opinion, that species differ from each other in a (usually rather large) number of factors, while a variety differs from its species only in one or a few factors. In other words, the difference is only a quantitative, not a qualitative one.

Attempts have been made to find a real qualitative difference between them. In his great work "Die Mutationstheorie" HUGO DE VRIES assumed the general difference that the offspring of varietal crosses segregated according to Mendelian law while species crosses did not. This distinction does not hold good. DE VRIES used MENDEL'S OWN crosses between species of hawkweeds (*Hieracium*) as proof of the correctness of his view. A few years later, however, I succeeded in showing that the reason why the offspring of the hawkweed crosses did not segregate was that the hawkweed hybrids reproduced themselves asexually (apogamically). I had the honour to give a report on these investigations at the Conference of Genetics here in London in 1906 (see *Report*).

We then had to abandon the theory that species crosses did not segregate, and later investigations have on the whole verified the assumption.

As to new experiences which in some rare but very important cases alter our view regarding this problem, I will come back to them later in my lectures. What I wish to emphasize at the present moment is merely that neither segregation nor non-segregation can be used as a criterion for distinguishing species from varieties. Nevertheless it is practical to distinguish between them, and the main reason is that they from a practical point of view apparently behave differently when crossed.

It is, I think, in most cases not difficult to produce hybrids between two varieties of the same species, and these hybrids are on the whole rather fertile when they are selfed or crossed back with the parents; consequently we often meet such varietal crosses and are able to study their behaviour. Species crosses, on the other hand, are much rarer and are generally sterile or at least very little fertile; but if they are able to produce offspring they segregate. This behaviour is a natural consequence of the fact that two species differ from each other in many characters (factors), while the varieties are only different from each other in one or a few points. When many factors are different, the affinities of the two parents are less and the chance for sterility of the hybrids produced is greater, as many, sometimes nearly all, of the combinations are not able to be established or, if established, to live.

The well-known facts that species in nature in most cases are rather well defined and keep themselves distinct in spite of their being able to hybridize and in spite of their habitats being nearly the same find their explanation in that way. If this were not the case taxonomy would be at a loss and the taxonomists would not be able to characterize one species in relation to another. An example which I have taken from one of WINGE's papers will make these points clearer:

Two species of *Geum* (Avens) are widely distributed in the temperate parts of Europe, including Great Britain. One species, *Geum rivale*, grows in wet places, meadows, etc., and has drooping flowers with rose petals; the other, *Geum urbanum*, has erect flowers with yellow petals, and blooms about a fortnight later and grows in hedges, woods, etc. The habitats of the two species rather often border on each other, and in such places it is not rare to find a natural hybrid between them; this has been described as *Geum* \times *intermedium*, and is intermediate between the two parents in a whole series of factors. The hybrid has also been made artificially by scientists, e.g. the British botanist F. E. WEISS and the Danish geneticist Ø. WINGE. Both have shown that when the hybrid is selfed the offspring shows distinct segregation, but the segregates are so many—because the distinguishing factors are many—that it is not possible to classify and count them at Mendelian ratios, unless you have an enormous number of individuals. If we cross the hybrid back with the parents,

the offspring also shows segregation, but most of the offspring are very like the parent used for the back-crossing; the combinations nearest to the parents seem to be the best fitted for existence.

Let us transfer these observations to the conditions in nature; the case will usually be that the hybrid grows amongst the parents, and there would be more probability of its getting crossed back with one of them than of selfing, as both species are insect-fertilized, and self-fertilization is only a retreat or shift. The offspring of the hybrid will, therefore, mostly be back-crosses, and we have just learnt from the experiments that such back-crosses are much like the original parents. It is consequently easy to understand that repeated back-crossings will soon efface any external sign of hybridity. Perhaps many of the plants which we classify as pure *G. rivale* or *G. urbanum* really have some trace of the other species hidden, although we are not able to see it from the morphological characters; some differences in the genetic behaviour of apparently pure strains in WINGE's cultures of *Geum* may be explained in that way.

This example shows how it happens that two species which are easily crossed together and which produce a fertile hybrid nevertheless keep distinct from each other under natural conditions.

There is another point to take into consideration. We know quite well that only a small proportion of the seeds of a plant germinate when sown under natural conditions, and that a much smaller proportion of the seedlings reach full development, owing to restricted space, etc. The chances for a hybrid to hold its place during such competition are consequently rather poor.

Just as the conditions for the continuance of the *Geum*-hybrid are in nature, so with other natural species-hybrids. The hybrid individuals will be rare and of slight importance, while the two parent species will continue and remain fairly distinct. Some experiments—by CRANE and Miss GAIRDNER—with species crosses amongst *Cochlearia*, to which we later come back, also show that in later generations the hybrids have a tendency to approach the original parents, the species.

We arrive, therefore, at the general conclusion that species hybrids in nature *apparently* do not play any rôle worth mentioning, as the species keep constant and the hybrids soon disappear. While this may hold good in most or at least in many cases, it is by no means always so, and the complications and aberrations from this common belief are of great interest both from a purely botanical and from a more general point of view. We are here at the beginning of a new road into an understanding of the manner in which new species arise by means of crossing.

It is not necessary for me to explain the importance of hybridization with regard to cultivated plants. Many of you know much more about that than I do. I shall only allow myself to recall a few general points concerning this matter. In his famous book "Variation of

Animals and Plants under Domestication," CHARLES DARWIN has collected from the literature and from unprinted sources all the knowledge available at that time concerning the many variations in animals and plants under domestication. The facts relating to our cultivated plants quoted by DARWIN were—as was natural at that time—rather meagre and uncertain, but on the whole they give an unmistakable impression which supports the assumption that our cultivated plants in many cases have arisen after hybridization between wild species, and that it has been the main object of the cultivator to keep and develop these variations, which, if left to themselves, would not have been able to maintain their existence.

J. P. LORSY has in his book "Evolution by Means of Hybridization" (1916) extracted the more important facts from DARWIN's material, and he draws attention to the fact that it has not been proved in a single case that a cultivated form has had "a single origin," as he calls it, while on the other hand "an origin from different sources" is probable in many cases. He therefore comes to the conclusion that our cultivated plants (and animals) are "the results of isolation of heterozygotes (i.e. individuals which have come from earlier crossings), followed by selection and isolation of the recessives or the results of crossing, followed by segregation and selection of the desirable segregates." We know quite well that such is the origin of a great number of our ornamental plants, especially the herbaceous ones, and that the process is still going on.

On the other hand, the origin of our fruit-trees and fruit-shrubs goes so far back that we have no well-founded knowledge about them, only suppositions. We still use the same methods to improve them: (1) isolation, if a good new form has arisen; (2) hybridization, to try to get new valuable forms, which we then keep by isolation and vegetative propagation. I need not remind you that, generally speaking, our fruit-trees and shrubs are always propagated vegetatively, not by seeds, because then it is not possible to keep the form in question, as it, being a heterozygote, segregates. The same is the case with regard to several herbaceous cultivated plants, especially the potato.

Wild species from which the cultivated forms come are very rare and very little known, and usually it is not possible to indicate a certain wild species as the origin of a certain cultivated plant. More probable interpretations are those which consider two or three wild species as partakers in the building of a cultivated plant. This is supposed to be the case with regard to our apples, plums, cherries, currants, strawberries, etc. As to the last mentioned, the appearance of the cultivated strains does not go so far back, and consequently we know more about from which wild species they came. I may mention here also some ornamental trees, as e.g. the Oxford Plane, which undoubtedly arose here in England from a cross between *Platanus occidentalis* and *P. orientalis*, and the quite new hybrid Larch, *Larix decidua* \times *leptolepis*, which appeared in Scotland.

Also many of the commonly cultivated Elms (*Ulmus*) here in England are hybrids, and can only be propagated by cuttings, not by seeds.

Another group of our cultivated plants are those which we propagate by seeds and which still keep their characters true. If we assume a hybrid origin, we must admit that in these cases segregation or other factors have worked in such a way that we have got constant races.

The most important cultivated plants of that category are our cereals—the plants on which the whole modern community has been built up. It is no wonder that plants of such economic importance have been the object of studies in many respects, amongst others also with regard to their origin. And the studies have shown us that there are some wild species, mostly from the near Orient, which, we must assume, are the ancestors of the cultivated cereals; but in most cases not one but several wild species are supposed to have taken part in the parentage; in other words, the cereals are considered as descended from hybrids.

What I have mentioned here is not new, and considerations of that kind have been at the bottom—more or less consciously—of many efforts by plant-breeders to produce new and better races of both ornamental and useful plants. Numerous experiments and studies have, especially during the last century, been carried out in that respect and have resulted in an enormous improvement in our cultivated plants, owing to newly raised varieties or races. You need only think of the differences in yield of our cereals fifty years ago and to-day, or of the sugar-beet or the strawberries.

With rare exceptions these experiments have had a purely empiric basis. The plant-breeder may have propagated vegetatively a race on a very large scale, hoping to get a variation which shows an improvement and fitted for further cultivation; or he may have crossed two races and tried to find amongst the varied offspring some individuals which seem worthy of further cultivation; or he may have selfed a race which is not constant, and amongst the offspring looked for better forms. In all cases he does not know beforehand whether his experiment will bring him any result or not, and he does not work on a definite line. But it is well known that such work has given valuable and sometimes even surprising results. English plant-breeders have been amongst the foremost, and in other countries, e.g. Holland and France, valuable results have also been obtained. In America the late Mr. LUTHER BURBANK was the most famous plant-breeder, whose work resulted in improvements of many of our cultivated plants by creation of new races.

All these experiments have had the drawback, which is given by their empiric basis, that the results were incalculable, and it could not be otherwise. But when the modern science of Genetics appeared it became possible to get a firmer basis. Here in England, where W. BATESON lived and brought Mendelism into vogue, you know that during the last twenty-five years—the time during which Genetics

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attained to that particular height. But under abnormal conditions, even in a temperate climate, no ring may be formed in any particular year, or two rings may be formed. The commonest case where no ring is produced occurs towards the base of a tree growing in a very dense wood. Such a tree has usually a long bare stem with a small crown, and as the nutritive materials which maintain the activity of the cambium, and from which this forms wood, come down from the crown, it follows that when the crown is small these substances will be scarce, and may be insufficient to enable the cambium in the lower part of the stem to form wood. It is evident that only a small quantity of material will be elaborated by a small crown, and when this material begins its descent of the stem, it is the cambium nearest to the crown that will be best nourished. Further down, the supplies may be sufficient to enable the cambium to produce a ring, though a narrower one than that which is formed further up; and the further we descend, and thus get away from the source of the supply of cambium food, the less will there be at the disposal of the cambium, until a point may be reached where nothing remains over from which a wood ring may be formed. In such a case the stem will be growing in thickness to the greatest extent in its

tends to bear them down towards the ground. Under these circumstances the cambium on the upper side of a branch is in a state of distention, while that on the under side is being compressed,

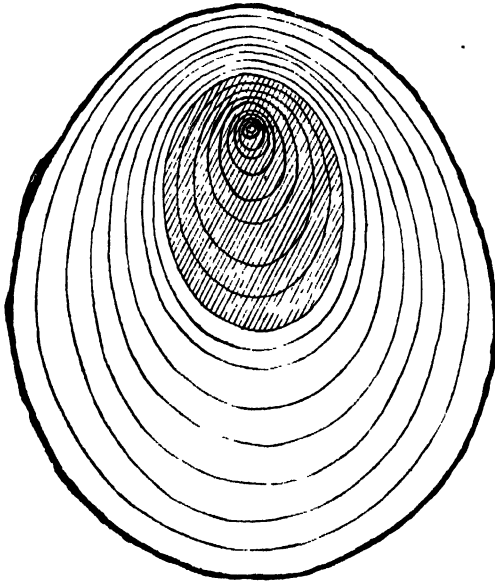


FIG. 38.—Ex-centric growth of a Scots Pine branch. (Semi-diagram from actual specimen.)

and this compression along the line of the cambium seems to result in much greater growth. Moreover, the character of the wood is distinctly different from normal timber, the cells showing great secondary thickening. This thickening of

[Specimen Page]

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have existed in their modern aspect—a fundamental change has taken place. Exact scientific studies work nowadays in common with practical plant breeding.

The objects used in the modern experiments for the improvement of cultivated plants have nearly always been different varieties within a species. Work with varieties is easier, as the production of a sufficient number of offspring after hybridization is not so often hindered by difficulties in fertilization, etc., as when dealing with species crosses. The same has been the case with the purely scientific genetic experiments; they have also mostly dealt with varieties and races.

This has been necessary to begin with. But now geneticists have also dared to attack the study of species crosses. The difficulties of such work have been already mentioned, and they are mainly difficulties in obtaining sufficient offspring owing to the great disposition to sterility. When such work nevertheless has been taken up it is because it is expected that the results will be of greater importance from a theoretical point of view; but it may well happen that such theoretical results may also be of great practical value, and the results of late years certainly encourage this hope.

It is about the results of species crosses so far obtained and their explanation that I wish to give you a short survey in the hope that it may interest you.

SPECIES CROSSES.

If we wish to get a closer understanding of the behaviour of hybrids and their offspring it is necessary to take cytology—the study of the contents of the cells—into consideration, especially that part of cytology which concerns the chromosomes. You know that each living cell contains a body which is called the nucleus; this nucleus has a rather complicated structure, but for our purpose it is sufficient to know that parts of it are very disposed to stain when using different dyes, and that these parts when the nucleus is going to divide consist of distinct pieces of distinct shape. We call such a piece of nucleus-substance a *chromosome*, and investigations have shown that each living cell in a plant during the division has the same number of chromosomes. When a cell is going to divide the chromosomes split longitudinally, and half of each chromosome goes to one of the two new cells to be formed, the other half to the other daughter-cell. In this way the plant keeps always the same chromosome number.

But it is not only the individual which has the same number of chromosomes throughout—all the individuals of a species have it. There is, however, one exception from this rule, that is, when the plant (or animal) produces sexual cells, *gametes*; the gametes contain always only half the number of the other (the so-called *somatic*) cells of the individual, and fertilization consists in the fusion of a male and a

female gamete—each with the half chromosome number, thus obtaining the full number again in the fertilized cell, the so-called *zygote*. We say that the gametes have the *haploid* chromosome number, usually designated by n , while the somatic cells have the *diploid* number, designated by $2n$; it follows that the number in the somatic cells is always an even number.

The manner in which the number of chromosomes gets *reduced*, as it is called, to half of the usual number, is as follows. When the chromosomes in a cell which is going to produce gametes are formed, and the nucleus is ready to divide, the chromosomes *conjugate* two and two; then these double chromosomes (*bivalent* chromosomes) arrange themselves as in the somatic cells, split longitudinally, and each half goes to each of the two daughter-cells, which consequently only contain half as many as their mother-cell. After this so-called *reduction division* (or heterotypic division) the two cells divide once again in somatic manner (homotypic division); thus from each mother-cell we get four daughter-cells, all with the reduced number of chromosomes—they are the gametes; in flowering plants as a rule all four gametes are developed in the male part—that is what we usually call *pollen-cells*—while in the female part three of them abort, leaving only one fully developed, the *egg-cell*. The four cells altogether are called a *tetrad*.

The numerous investigations on cell-divisions and on chromosomes have shown that in plants the number of chromosomes varies from $n = 3$ (haploid) upwards towards about 100; but the lower numbers are the most common. We find that in some genera the number of chromosomes is the same throughout the genus, e.g. *Aquilegia* $n = 7$, *Beta* $n = 9$, *Pisum* $n = 7$, while in larger genera usually some species, often a group of species, have one number and others have other numbers. It is often found that the numbers are arranged as multiples of a basal one, thus forming an arithmetical progression; e.g. we have in *Rosa* the following haploid numbers (according to investigations of TÄCKHOLM, Miss BLACKBURN and HARRISON, and C. C. HURST): 7, 14, 21, 28, 35, 42, 56; we say that in *Rosa* we have *polyploidy*, and that the species with $n = 7$ ($2n = 14$) are diploid, the next species are tetraploid, those with $n = 21$ and $2n = 42$ are hexaploid, the next octoploid, and so on. Another example is *Chrysanthemum*, in which TAHARA has found $n = 9$, 18, 27, 36 and 45.

When the male and the female gamete fuse during the fertilization, the chromosomes from one gamete conjugate with those from the other; then the pairs split longitudinally and the usual division sets in; the *zygote*—which is the beginning of the new plant—gets the same numbers of chromosomes from each parent, and as we have a firm basis for believing that the chromosomes are the actual carriers of genetic factors (genes), the *zygote* gets the characters from both parents in equal doses; thus the offspring must be like the parents, provided they are alike, i.e. belong to the same genetic unit,

the genospecies. Roughly speaking, the same is the case when two individuals of a variety or race (a microspecies) produce an offspring, and also when two individuals of a usual species do the same.

When the two parents are not alike, the offspring—the hybrid as we call it—must show some deviations from the normal scheme, and they usually manifest themselves in the chromosome behaviour. We have learned that some species within a genus have the same chromosome number, others have different numbers; thus we get two categories: hybrids between two species with the same chromosome number, and hybrids between two species with different chromosome numbers.

We consider firstly the case where *the two parents have the same chromosome number*; but we must remember that, because the number is the same, their value is perhaps—or probably—not the same, and therefore it is not quite the same as a fertilization between two individuals of the same kind.

The example mentioned earlier, the two *Geum*-species, belongs here: both species have $n = 21$ and $2n = 42$. When hybridization takes place the hybrid gets 21 *G. rivale* chromosomes and 21 *G. urbanum* chromosomes, and in all its somatic cells there are equal parts of both parents. The gametes of the hybrid formed after the reduction division contain also 21 chromosomes, and they are in some gametes all *rivale*, in others all *urbanum*, and consequently when they are fertilized, the result is a segregation according to MENDEL'S law, only that the combinations of factors are many, not a single or a few, as in varietal crosses. We thus get an explanation of the behaviour mentioned above of the hybrid and its offspring, and also an explanation of the fertility of the hybrids. The equality of the number of chromosomes in the parents makes it possible to have an apparently normal reduction division and fertile male and female gametes.

Similar results have been found by BAUR when crossing *Antirrhinum majus* with *A. molle* (both $n = 8$) and by WINGE when crossing several species of *Aquilegia* ($n = 7$). Crosses between *Triticum* species of the Bread Wheat series also belong to this category, but the segregation is here somewhat complicated owing to what is called non-disjunction (MÖCKEL and NILSSON-LEISSNER). It is worth mentioning that in *Triticum* the Small Spelt series (*monococcum*, etc.) has $n = 7$, the Emmer series (*dicoccum*, *durum*, *polonicum*, etc.) $n = 14$, and the Bread Wheat series (*spelta*, *vulgare*, etc.) $n = 21$.

It is by no means always that species with the same chromosome number are able to produce fertile hybrids; it is really more usual that the hybrids are only partly fertile or sometimes even sterile, either completely sterile or sterile when selfed, but more or less fertile when crossed back with the parents. We know a whole series of steps from completely fertile to completely sterile hybrids between species with the same chromosome numbers.

As examples of sterile hybrids may be mentioned the usual cross between *Primula floribunda* and *P. verticillata* ($n = 9$) (DIGBY, 1912),

Bryonia alba and *B. dioica* ($n = 10$) (CORRENS, 1916), some *Verbascum* and *Celsia* hybrids (MÜRBECK, HÅKANSSON).

When the sterility is only partial, usually the pollen cells have degenerated, while the egg-cell is fertile and can be fertilized by the pollen of the parents. The reason for the sterility is probably that the chromosomes from the two parents are not able to conjugate.

We now proceed to the cases where the parents have different chromosome numbers. It is quite natural that in these cases the difficulties in the way of producing hybrids are greater, and still more difficult is it to get fertile hybrids, as the conditions during the reduction division in the hybrid must deviate very much from the normal ones. It is, therefore, not surprising that the hybrids of that category are mostly sterile. The first examined case was a natural hybrid between *Drosera longifolia* ($n = 20$) and *D. rotundifolia* ($n = 10$) in which O. ROSENBERG (1909) found the somatic cells containing 30 chromosomes, and when the reduction division took place 10 *rotundifolia* chromosomes conjugated with 10 *longifolia* chromosomes, while the remaining 10 *longifolia* chromosomes were left unpaired (univalent), but no gametes were produced.

Other cases of hybridization between two species with different chromosome numbers and resulting in the formation of sterile hybrids are: several hybrids between species of the different series of *Triticum* (e.g. *T. dicoccum* ($n = 14$) \times *T. monococcum* ($n = 7$)), many *Oenothera*-hybrids; *Erophila violaceopetiolata* ($n = 32$) \times *E. cochleoides* ($n = 7$) (WINGE); *Digitalis purpurea* ($n = 24$) \times *D. lutea* ($n = 48$) (HAASE-BESSELL); *Fragaria bracteata* ($n = 7$) \times *F. virginiana* ($n = 28$) (ICHIJIMA); *Lamium dissectum* ($n = 18$) \times *L. amplexicaule* ($n = 9$) (C. A. JØRGENSEN); *Chrysanthemum marginatum* ($n = 45$) \times *C. lavandulifolium* ($n = 9$) (TAHARA and SHIMOTOMAI): and the genus-crosses: *Aegilops cylindrica* ($n = 14$) \times *Triticum vulgare* ($n = 21$) (SAX), and *Triticum vulgare* ($n = 21$) \times *Secale cereale* ($n = 7$) (KIHARA a.o.). In some of these cases single individuals of the hybrid may be more or less fertile, at least when crossed back with the parents, an interesting point to which we shall return presently.

We have other cases where the hybrids, in spite of the different chromosome numbers in the parents, are more or less fertile. CRANE and GAIRDNER's *Cochlearia*-crosses are of that kind; *C. officinalis* has $n = 14$ and *C. danica* has $n = 21$. Also some of J. CLAUSEN's hybrids between *Viola tricolor* ($n = 13$) and *V. arvensis* ($n = 17$) are fertile.

In the genus *Triticum* the Japanese botanist KIHARA has found very interesting conditions with regard to hybridization. A species of the Emmer series ($n = 14$) crossed with a species of the Bread Wheat series ($n = 21$) gives a hybrid with 35 chromosomes in the somatic cells ($2n$). When the reduction division in the hybrid is going on, 14 Emmer-chromosomes conjugate with 14 Bread Wheat-chromosomes as in *Drosera*, and the remaining 7 Bread Wheat-chrome-

somes split ; the following homotypic division is normal for the bivalent chromosomes, while the univalent ones are distributed by chance to the gametes, the result being that some gametes contain 14 chromosomes, others 14 + 7 chromosomes. In F_2 and later hybrid generations more or less fertility exists, and the investigations show that those individuals are the most fertile which have either $2n = 28$ (2×14) or $2n = 42$ (2×21), and they are very much like the original parents. Thus, a kind of selective process goes on, resulting in the disappearance of the intermediate forms, just as in the *Geum*-hybrids.

Similar results have been found by W. P. THOMPSON in the cross between *Triticum durum* ($n = 14$) and *T. vulgare* ($n = 21$). Also the genus cross *Triticum vulgare* ($n = 21$) \times *Secale cereale* ($n = 7$), which, as mentioned above, usually is sterile, in some cases shows a behaviour of the same kind in the respect that repeated back-crossings with the parent produce types which are much more fertile and like the original parent.

KIHARA has also shown that when he uses the pollen of the hybrid *Triticum spelta* ($n = 21$) \times *T. polonicum* ($n = 14$) those pollen cells which have 14 chromosomes by preference fertilize *T. polonicum*, while those with 21 chromosomes fertilize *T. spelta*.

Thus all the hitherto given examples of hybrids between species show a tendency to go back to the parent species by means of a kind of selection ; they do not give anything durably new, because the new which may have appeared disappears again, if not kept by means of vegetative propagation.

It remains to mention the cases where by species crosses we get *wholly or partly stable new types* which can be propagated by seeds and which thus represent permanent new types. It is only quite recently that such cases have been found in which we have been able to follow what happens with regard to their chromosome behaviour. They are of the utmost importance for the understanding of the appearance of new species and to verify the value of the theory of the origin of new species by means of hybridization. Undoubtedly they will be of practical value also in both agriculture and horticulture.

In 1917 the Danish geneticist Ø. WINGE advanced the theory that a new type could be produced by hybridization between two types, if the chromosomes of the hybrid were split longitudinally and thus doubled ; such a hybrid with the double number of chromosomes would, if the divisions of the cells proceeded normally, be constant at once. This theory would also explain the polyploidy in many genera. At about the same time the Swiss botanist A. ERNST independently arrived at a similar conclusion when trying to explain that in genera where apogamic species occur the chromosome numbers in these are usually multiples of the numbers in the sexual species.

At that time no convincing evidence was at hand, but the theory gave a fit explanation of many cases which could not be understood

otherwise. But since then we have got some examples which seem to prove the correctness of the theory.

Usually the hybrid *Nicotiana glutinosa* ($n = 12$) \times *N. Tabacum* ($n = 24$) is sterile, according to investigations by the Americans R. E. CLAUSEN and T. H. GOODSPEED (1925). It has $2n = 36$, and when it comes to production of gametes the reduction division is irregular and no fertile gamete is formed; neither was it possible to cross it back with the parents. From this rule there appeared one exception. In a selfed plant a few seeds were formed and gave an offspring of three individuals, of which one was partially fertile and after selfing gave an F_2 offspring of 65 individuals; they were nearly uniform and like the F_1 plant, only they were wholly fertile. Cytological examination showed that the cell-divisions were regular and the pollen cells—the male gametes—contained 36 chromosomes; the plant was thus *tetraploid*. This cannot be well explained otherwise than that a regular doubling of the chromosomes has taken place in the F_1 , in the manner which WINGE assumed. CLAUSEN and GOODSPEED further drew attention to the well-known hybrid *Primula* \times *kewensis*, which could be supposed to have arisen in a similar way. As mentioned above, the usual cross between *P. floribunda* and *P. verticillata* is sterile, but in a single case a shoot of the hybrid showed fertility, and from this all the *P. \times kewensis* have come. Now *P. floribunda* and *P. verticillata* both have $n = 9$, while *P. \times kewensis* is tetraploid and has $n = 18$, and consequently it seems obvious to compare it with the fertile *Nicotiana*-hybrid.

This year (1927) the Russian botanist KARPETSCHENKO published a very interesting paper in which he reports on hybridization experiments with *Raphanus sativus* ($n = 9$) and *Brassica oleracea* ($n = 9$). Usually this hybrid is sterile, but he succeeded in obtaining a somewhat fertile F_1 which in the next generation (F_2) showed full fertility and was tetraploid. The new, and well characterized, type is constant. An interesting observation is that the mother cells of the pollen cells do not divide twice (the usual tetrad) but only once, forming *dyads*. Now the Swedish botanist O. ROSENBERG (1926) had advanced the hypothesis that the appearance of the double chromosome number should be taken in relation to observations he had made in the formation of pollen in *Hieracium*, in which not tetrads with reduced chromosome number are found but dyads with somatic chromosome number. If KARPETSCHENKO's observations are right—and we have no reason to doubt it—they corroborate ROSENBERG's supposition.

Other cases of production of new types with double chromosome numbers are the following. In *Fragaria*, LONGLEY (1926) and ICHIJIAMA (1926) have shown that a series of species has $n = 7$, another $n = 14$, and a third one $n = 28$. When crossing two species of the first series ($n = 7$) ICHIJIAMA usually got a hybrid in which the chromosome number was the same as in the parent, but in a single case he got an individual which had $n = 14$ and the offspring

of which was morphologically distinct and kept constant. We have thus a new tetraploid type. In a similar way it may be possible to explain our cultivated strawberries.

During a long series of years the Austrian botanist E. TSCHERMAK studied cereals from genetical points of view, and quite recently (1926) he and BLEIER have published an account of some of their researches. Usually the hybrids between the species are sterile or nearly so, as we also know from many other investigations; but in TSCHERMAK's cultures two fertile hybrids—and they are genus-hybrids—have appeared, namely *Aegilops ovata* ($n = 14$) \times *T. dicoccoides* ($n = 14$) and *Aegilops ovata* \times *T. durum* ($n = 14$); the hybrids are rather intermediate in characters and are constant. Now BLEIER found when examining the cytology of the hybrids in F_2 and F_3 that they were tetraploid in regard to the parent (octoploid within the genus). It would have been very interesting to know when the doubling set in: probably it was already in F_1 .

All these cases have shown us the appearance of new types connected with a regular doubling of the chromosome number. But we know some other cases, where the fertile hybrid has a number which is *higher than the double*, e.g. Miss BLACKBURN and HARRISON (1924) had a *kosa*-hybrid with $n = 42$, while of the parents *R. spinosissima* has $n = 14$ and *R. tomentosa* $n = 7$.

On the other hand, in some cases the fertile hybrid has not fully doubled the number of chromosomes. To this group belong the hybrids produced by the Danish botanist J. CLAUSEN (1926) between *Viola tricolor* ($n = 13$) and *Viola arvensis* ($n = 17$); here several new forms with higher chromosome numbers have appeared, e.g. $n =$ about 22, but none with the double number. The explanation given is that not all the chromosomes have doubled.

It is probable that the researches in sugar-canes by the Dutch botanist BREMER are to be referred hereto. He found in *Saccharum officinarum* $n = 40$ and in *S. spontaneum* $n = 56$, and the hybrid F_1 had $n = 68$. If we suppose that only the chromosomes of the mother were doubled (80) we get in the hybrid $2n = 80 + 56 = 136$, thus $n = 68$.

At Berkeley in California a very intensive study of the genetic behaviour of *Crepis* is going on, and the results hitherto published have been very interesting and promising. Amongst them are some reports by BABCOCK (1924) on species crosses. The investigators found that fertile hybrids with doubled or enlarged chromosome numbers could be obtained. A very fertile hybrid was *C. setosa* ($n = 4$) \times *C. biennis* ($n = 20$), which in F_1 had $2n = 24$.

There are some few other cases which are not so fully and well examined as those here given, but I think that what I have told you is sufficient to show that biological science has made a step forward. The hypothesis of the production of new species by means of hybridization is now much more probable than a few years ago, and the discovery of the doubling of chromosome numbers shows us a

way to understand better our cultivated plants, of which so many have higher chromosome numbers than the related wild species. It makes it probable that the cultivated types have arisen as hybrids and that their constancy is explained by the doubling of chromosome numbers. But I need not say that such an explanation does not cover all cases. Nevertheless, we find polyploidy in *Salix*, *Populus*, *Rosa*, *Rubus*, *Crataegus*, *Tulipa*, *Narcissus*, *Fuchsia*, *Viola*, *Nicotiana*, *Papaver*, in Wheat and Oat, etc. ; thus in a whole series of what we call polymorphic genera, and of nearly all of these genera we cultivate some species.

Things look brighter with regard to Genetics than when my late friend, Dr. W. BATESON, the father of this new branch of science, in December 1921 read his famous address to the American Association for the Advancement of Science. He felt at that time Genetics had arrived at a dead-end and confessed it frankly. I wish he had lived to see the progress that seems ahead of us.

SOME FUNGUS DISEASES OF BULBS.

By W. J. DOWSON, M.A., Mycologist, Wisley.

[Read September 13, 1927; Mr. A. D. COTTON, F.L.S., in the Chair.]

It is now about the time of year that bulbs are being bought, and therefore it may prove of interest to Fellows of this Society to hear something about their diseases, more particularly those which can be detected with a little care on the dormant bulbs before planting. By rejecting those which bear the signs of disease, much disappointment and no little loss can be avoided.

But before describing to you some of these diseases and the symptoms by which they may be recognized *now*, it will be as well perhaps to explain what is meant by a fungus disease, and incidentally what is meant by the word "fungus."

In the first place fungi are plants and *not* animals, that is to say they absorb their food as solutions and do not ingest solids as do most animals at some time or other. All fungi are devoid of chlorophyll, the pigment which makes most common plants appear green and enables them to absorb carbon dioxide from the air. But to assert that all plants lacking chlorophyll are fungi would not be correct, for neither the dodder (*Cuscuta*), the broomrape (*Orobanche*), nor the toothwort (*Lathraea*) contains chlorophyll, and they are certainly not fungi.

The bodies of fungi are made up of extremely delicate, intertwining and branching tubes called hyphae, and the mass of hyphae considered together is spoken of as a mycelium, a common example of which may be seen in mushroom spawn. But even this character is shared by a few plants which are not fungi, for instance the gigantic *Rafflesia Arnoldi* of Java, whose flowers, a yard across, spring from a body very closely resembling a mycelium embedded within the roots of certain tropical vines.

Fungi, however, reproduce themselves in a manner totally unlike most other plants, namely by very minute and simply organized bodies, known as spores, which are produced on the ends of special hyphae. Some idea of what a fungus spore is like may be obtained from the consideration of pollen grains, which are, however, usually rather larger than the average fungus spore.

Everyone is familiar with the fact that pollen grains are carried about on the bodies of insects or are blown by the wind and that they germinate with the production of a germ tube, all of which is true of the fungus spore. But a pollen grain will not of itself grow so as to produce a plant like that from which it originated, no matter how favourable may be the conditions of temperature, moisture and the

presence of a supply of food. On the other hand, the fungus spore under such conditions not only germinates, but produces a mycelium which grows to become like the fungus plant from which the spore originally came.

Besides fungi, some other members of the plant kingdom reproduce themselves by spores, namely mosses and liverworts, but they contain chlorophyll, which therefore separates them from the fungi. As a popular definition of a fungus it may be said, therefore, that a plant which is composed of hyphae, but entirely lacks chlorophyll and which reproduces itself by means of spores, is a fungus.

Now because fungi are devoid of chlorophyll the carbon necessary for their growth cannot be obtained from the air and must be absorbed from matter of a more complicated form than carbon dioxide. They do this in two ways. They may absorb the carbon-containing substances of dead organic matter, such as jam, leather, or dead leaves, and are then known as saprophytes. Or they can take the carbon-containing bodies from *living* matter, usually plants, but sometimes animals, and are then called parasites.

Some fungi employ the first method, others the second, and a considerable number make use of both, so that a fungus may be a saprophyte for part of its existence and a parasite for another part. You will see the significance of the last mode of nutrition when we come to deal with those fungi which cause disease in bulbs. Besides the propagation and dispersal by means of spores, some fungi produce compact masses of hyphae, rounded and hard when mature, and black on the outside. These bodies vary in size from a pin's head in diameter to $\frac{1}{4}$ inch across, and are called *sclerotia*, from the Greek word meaning hard. When the rest of the mycelium dies away the sclerotia remain in a dormant condition, and after a time, varying from months to years, commence to grow, should the conditions be favourable. Either spores are formed at once, or a mycelium is produced which later gives rise to spores. The sclerotia serve to tide the fungus over adverse conditions such as drought or cold, and enable the organism to propagate itself more particularly from season to season, that is in Time, whereas spores, which are not long-lived generally, multiply the fungus during any one season, that is in Space.

It so happens that a few fungi have only the sclerotial method of propagation, and as these are responsible for certain serious diseases of bulbs it will be desirable to amend our definition of a fungus so as to include this character. We may say, therefore, *that a fungus is a plant composed of hyphae, entirely lacking chlorophyll, which reproduces itself by spores or sclerotia*. The two important sclerotium-forming fungi which we shall now consider are first *Botrytis* and secondly *Sclerotium*.

The spore form of *Botrytis*, also known as grey mould, is commonly found on decaying plant tissues in a moist atmosphere and often in diffuse light. Sclerotia are produced by all the species of *Botrytis*,

and many of them can be distinguished at a glance by the size and shape of these resting bodies.

It is important to remember that when placed under favourable conditions for growth the sclerotia give rise either to the grey mould, that is the spore from *Botrytis*, or to a mycelium which will later on produce the *Botrytis* spores. It is not less important to remember that generally the *Botrytis* of one kind of bulbous plant is confined to that one plant and will not infect any other kind. There is, however, one exception to this general rule which I shall point out as we proceed.

Perhaps the best known of these diseases, and certainly the most widely distributed, is the tulip disease known here and on the Continent as "fire," and as *Botrytis* blight in America.

The effects of the attacks of this parasite on the growing Tulip plant are unfortunately only too well known. The effect on the dormant bulb is not so well known. To commence with the growing plant, the leaves become flecked with small brown spots and the green parts often turn reddish in colour, hence the name "fire." Sometimes the open flowers are attacked, the perianth becoming spotted with numerous small, pale areas which turn brown, producing an effect most marked on reddish Tulips.

The disease is generally prevalent just after very cold weather, when both leaves and blooms become covered with the grey mould. Under milder conditions very little disease is seen on the older plants, but that it exists is made evident by the misses in the beds, and by the stunted nature of some plants, which produce but tiny flowers, only to wither rapidly away or to fall completely over.

When the bulbs are lifted later on it will be found, if careful search be made, that those plants which were attacked late in the season bear small black sclerotia, about the size of a pin's head, on the brown scales generally round the nose of the bulb; less frequently are they to be seen on the remains of the flowering stalks and quite rarely on the very base. How came these sclerotia there?

Now the failure of some bulbs to come up at all or to make only a stunted growth and the "fiery" appearance of the larger plants are entirely due to the planting of sclerotia-bearing bulbs. The sclerotia are not detected and the bulbs seem quite healthy and sound; but consider what happens if they are planted. For a time the bulbs with their attendant sclerotia remain dormant. Then the bulb starts growth, first of all by putting forth roots, and then, just as the leaves are about to appear above ground in spring, the sclerotia commence to grow by producing a mycelium. This infects the leaves as they come through the ground, with the result that nothing more than a diseased leaf is produced, as I have described. More rarely, but quite frequently, the developing leaves and the fleshy scales are destroyed altogether, so that nothing appears above ground, and the result is a miss. Those, however, which do manage to come up act as sources of infection to surrounding Tulips, for should northerly winds prevail, the grey mould, or *Botrytis*, soon appears, and the spores blown

by the wind infect the leaves and flowers of neighbouring plants, producing the "fire" effect. Some spores get washed down the leaf stalks to the tops of the bulbs and start an infection of the outer scales. The activity of this mycelium is retarded, however, when the bulb becomes dormant, and sclerotia are then formed. The life-cycle of the parasite is thus completed with the formation of sclerotia upon the bulbs, and repeats itself whenever such bulbs are planted.

Furthermore, some of the sclerotia become detached and remain dormant in the soil until the next year, or it may be for two or three years. Eventually, however, the sclerotia renew growth by a mycelium which lives for a time saprophytically on the dead organic matter in the soil; but should Tulips be planted in such ground infection is extremely likely to occur.

The name of the parasite is *Botrytis Tulipae* (1), formerly known as *Botrytis parasitica*. It attacks no other plant, and the disease is the only common one of Tulips in this country.

The measures which should be adopted to control the disease are the following :

(a) When buying bulbs, particularly those imported from abroad, or when sorting out (prior to planting) those stored from last season, carefully examine them all over for the presence of sclerotia and reject any upon which they are found.

(b) Should the disease appear in planted bulbs, or should there be misses, at once remove and burn all infected plants, taking care to remove the soil round the bulbs and not forgetting that in which the misses have occurred. Prompt action at the time will lessen the spread of the disease and will do much to prevent the contamination of the soil with sclerotia.

On the Continent the Narcissus is attacked in a somewhat similar way by another species of *Botrytis* called *Botrytis narcissicola* (2), and because of the appearance of the attacked foliage the disease is called "smeul" in Holland—that is, "smoulder." Within the last few years bulbs bearing the sclerotia of this *Botrytis* have been imported into England, and in my experience rarely come to anything, but generally rot away in the ground.

If they do show anything above ground at all it is to produce but a few sickly leaves, which soon turn brown and wither. The sclerotia of *Botrytis narcissicola* are rather larger and flatter than those of *Botrytis Tulipae*, measuring about $\frac{1}{4}$ inch across. In spite of this, however, they are not so easy to detect, as they are rarely formed on the outside scales, but occur most frequently on the inner ones at the neck or nose, and sometimes deep within the fleshy scales. In order to make sure of their presence or absence it is necessary to pull aside slightly the outer dry brown scales.

Although it has been asserted by Continental investigators (2, 3) that *Botrytis narcissicola* will only attack the Narcissus, it has been recently discovered at Wisley that the leaves, the developing and still green capsules and their stalks of the Snowdrop can also be attacked

and killed. Snowdrop bulbs cannot be infected, neither has it been found possible to infect those of the Narcissus. The leaves and flower-stems of the latter are, however, rapidly killed when artificially inoculated with either spores or mycelium of the parasite. By the planting of imported diseased bulbs in this country there is the possibility of infecting the foliage of neighbouring Narcissi, with the consequent weakening of their bulbs. As in the case of the Tulip disease, the only practical means of preventing the trouble is to reject all bulbs bearing sclerotia when planting—better still, when buying.

A "fire" disease of Narcissus caused by *Botrytis cinerea* (4) on the Continent is but rarely met with here, and need not take up our attention now. There is, however, a "fire" disease in Britain, well known to growers in certain districts, which has been recently shown at Wisley to be caused by a hitherto undescribed species of *Botrytis*. This disease is found in the western part of the British Isles, where the rainfall is greater than in the east, and is characterized by large yellow blotches on the leaves, which eventually turn brown and wither away. The bulbs are considerably weakened, particularly in a wet season, but are not attacked by the fungus itself. Comparatively large sclerotia, elliptical in shape and about $\frac{1}{4}$ inch long, are formed in the dead leaves and eventually reach the ground, where they become the source of infection in succeeding seasons. Hitherto the disease has been controlled to a certain extent by rejecting the most susceptible varieties, but it might be worth trying the effect of sulphur as a protective agent during the growing season. The disease was first studied at Wisley, where the fungus responsible for the yellow blotches was discovered and named *Botrytis polyblastis* (5).

Snowdrops (6) are sometimes attacked by *Botrytis galanthina*, which damages the plants in very much the same way as *Botrytis Tulipae* affects Tulips, but the mouldy appearance of the flowers and young leaves is much more pronounced. Sclerotia, a little larger in size than those of *Botrytis Tulipae*, but very similar to those of *Botrytis narcissicola*, are formed on the outer scales of the bulbs and are quite easy to see.

Botrytis galanthina is more often encountered in the north than in the south, and should be treated in the same way as the Tulip disease.

Botrytis cinerea, which I mentioned just now as producing a "fire" disease of Narcissus on the Continent, is the one exception to the general rule that species of *Botrytis* are distinct for different bulbs.

In this country a *Botrytis* (not certainly *B. cinerea*) causes much damage to Lilies and the disease is generally known as the lily disease (7). All the green parts, including the flower buds, are liable to attack, which becomes very noticeable by the presence of rounded orange-brown or buff-coloured spots. These enlarge with alarming rapidity, and result in the almost complete destruction of all the parts above ground. The bulbs are, however, but rarely infected. The severity of an attack depends almost entirely upon weather conditions, though no doubt some species are more liable to infection than others.

The disease is to be expected if northerly and particularly north-easterly winds are experienced any time during the growing period, whereby the plants receive a sudden and severe check.

The Botrytis mould is not very evident, but becomes visible later after wet weather on the shrivelled brown parts, and if the cold and wet weather is at all prolonged the attack develops into epidemic proportions. Small, elongated sclerotia, rather irregular in shape, are also produced, and are to be found slightly embedded within the dead tissues.

There is no known course of action whereby the disease can be prevented or checked when it appears. The only advice which can be offered is to avoid as far as possible positions which are at all exposed to the north and north-east. In the shelter of a wall facing south Lilies are not so liable to attack.

A disease of Spanish and other bulbous Irises is now under investigation at Wisley, and has been shown to be due to a Botrytis similar to that which causes the lily disease. It is too early to say if the two are identical, though the effects are equally disastrous.

Just as the blooms are at their best the whole plant topples over and rapidly withers up. The green parts turn the colour of straw, but the flowers are not much affected. If slightly pulled the plants easily come away from the soil, as the underground portions have been almost entirely destroyed. Sclerotia are present on the remains of the bulbs and on the lower portion of the stems. It has been proved at Wisley that the sclerotia give rise to spores of Botrytis which will infect and kill the leaves of Spanish and Dutch Irises. Like the lily disease the green parts appear to be the first attacked, and sclerotia have not been found, so far, upon dormant bulbs. Probably other bulbous Irises will be found susceptible to the attacks of this Botrytis, which may turn out to be identical with the lily parasite. The matter is being pursued at Wisley, and for the time being the Botrytis on Spanish Iris has been relegated to the species *cinerea*.

Thus it will be seen that what is known as *Botrytis cinerea* has been found to attack three different kinds of bulbs, viz. Narcissus, Lilies and Spanish Irises.

The only other serious bulb disease caused by Botrytis is the neck rot of Onions due to *Botrytis Allii* (8). The disease is perhaps most noticeable in stored Onions, which commence to rot at the necks and bear numerous sclerotia like those of *Botrytis narcissicola* in size. Sometimes the sclerotia are present in the form of a crust, many having grown together.

The initial attack, however, takes place in the field by spores arising from sclerotia which have got into the soil. Any part of the Onion plant when moist, as after dew or rain, is liable to infection by the spores, but the part most generally attacked is the neck, where the leaves spread out over the bulb, and which is the first part to turn yellow in the ordinary course of events.

During wet or damp weather such attacked plants may bear the Botrytis stage on every part above ground, including the flowers.

The disease is favoured by the application of large quantities of stable manure before planting and by commercial fertilizers applied late in the season. *Botrytis Allii* is not known to attack any other plant.

I have now considered the more common diseases of bulbs due to the sclerotium-forming fungus *Botrytis*, and there remain a few important diseases due to fungi which form sclerotia but no spores. Such are placed in the genus *Sclerotium*, the most widespread species of which, *Sclerotium tuliparum* (9, 10), sometimes attacks Tulips, and quite recently *Iris reticulata* (11) in this country, causing a disease known as grey bulb rot.

The parasite is, however, far more common on the Continent and in America, where, besides Tulips, Hyacinths, Yellow Narcissi, *Iris hispanica*, Fritillaria and Scilla have been attacked.

The bulbs become infected underground, and either make no growth at all or only a very retarded display, which soon withers and dies. You will recall that these are the symptoms of an attack by *Botrytis Tulipae*, and for many years the two parasites were confused under the name of either *Botrytis parasitica* or *Sclerotium tuliparum*. On digging up such plants it is found that the soil sticks to the bulbs, which are more or less decayed and have numerous, rather large, black sclerotia, about $\frac{1}{4}$ inch across, on the rotted surface about the necks. Sclerotia will also be found in the soil close to such bulbs, but the roots are nearly always sound.

In this instance infection is entirely due to contaminated soil and takes place in early winter. The mycelium arising from the sclerotia spreads in the soil, and first of all penetrates the scales about the neck of the bulb. If Tulips are continually planted in such soil, the ground becomes so full of sclerotia that eventually not a single bulb comes up, and for this reason the contaminated areas are known in Holland as "Kwade plekken," i.e. bad spots. The parasite spreads but slowly from one place to another, and is probably introduced into a new locality by a few small sclerotia embedded between the scales of otherwise perfectly sound bulbs. As regards control measures, the Americans have shown that the parasite can be completely eradicated from the soil by an application of formalin at the rate of 1-1 $\frac{1}{2}$ lb. formalin to 5-6 square feet of soil. The formalin should be diluted with sufficient water so as to ensure wetting the soil to a depth of 6-8 inches.

Another and distinct species of *Sclerotium* called *Sclerotium cepivorum* (12) is responsible for the white rot or mouldy nose of Onions in early summer. The sclerotia are very much smaller than those of *Sclerotium tuliparum* and are about the same size as those formed by *Botrytis Tulipae*. They occur in great numbers at the base of young onion plants at the place where the roots ought to be. Wilting and yellowing of the leaves are the first visible signs of disease, as the roots are attacked first by mycelium arising from sclerotia in the soil. From the roots the mycelium spreads upwards into the base of the young bulb, which becomes covered with much fluffy white mycelium. The small black sclerotia are formed later and the mycelium is no longer

visible. Warm, damp weather favours the disease, which is spread by the planting of diseased seedlings or sets, and is increased by repeatedly planting Onions in the same ground.

Among Gladioli a serious disease has made its appearance in the last year or two, characterized by the yellowing and drying of the foliage and often by the failure to flower. It is known as the dry-rot disease, and although it may have been with us for the past 10 or 12 years, the recent outbreaks are most probably due to slightly infected corms imported from abroad. The disease is also known on the Continent, but has been studied in any detail only in the United States and in Canada. I include it here because, so far, no spore-form has been connected with a fungus almost invariably associated with the diseased tissues and which produces very minute and numerous sclerotia on the decayed bases of the leaves. The fungus has not even received a specific name, and is referred to as *Sclerotium sp.* (13). From the investigations of North American pathologists it seems certain that this *Sclerotium* is the active pathogenic fungus involved in the disease, which, owing to the popularity of the Gladiolus, is likely to spread with serious results. I intend to deal with it at some length because, so far, very little has been written about the disease, and that which has appeared is not easily accessible to admirers of the Gladiolus.

The disease is most noticeable just before and during flowering, although a few plants will have withered at a much earlier date. The foliage turns yellow, then brown and dry, and becomes blotched with the growth of saprophytic moulds. These are all signs of something being wrong at the roots, and on lifting such plants it will indeed be found that in every instance the roots are scanty and decayed. Moreover, there are no, or very few, contractile roots, those important organs which spring from the junction between the old and young corm, one of the functions of which is to absorb water for the leaves and flowering stem.

The immediate cause of the withering is the lack or insufficient supply of water, and this in turn is due to lack of roots. The poor development of roots and their early decay are due to the invasion by the fungus *Sclerotium sp.* The corms of plants which withered early in the season will also be found to be considerably decayed. In all probability it was such corms which introduced the disease in the first instance, for corms taken from a diseased area are likely to bear the parasite upon them. The signs of the presence of the fungus on planting corms are not very obvious, but if search be made a few small black depressions can be found on the surface. The depressions vary in size from a pin's head to a $\frac{1}{4}$ inch across and are studded with the minute black sclerotia, which are quite unmistakable when viewed through a hand lens.

The sclerotia produce mycelium which spreads in the soil, attacks and destroys the roots of the affected plants, and extends to those of neighbours. From the original depressions on diseased corms the mycelium spreads inwards and destroys the tissues of the corm itself. The destruction of the roots brings about the yellowing, and

therefore the weakening, of the foliage, and it is then that the mycelium in the soil attacks the bases of the leaves, causing a rot just below ground level. Finally, sclerotia are again formed on all the dried-out portions, particularly the leaf bases. That the soil can become heavily infected is indicated by recent experiments in Canada, where field trials showed that when healthy stock was planted on ground which had borne diseased plants 80-100 per cent. diseased and worthless corms were the result. Stock artificially infected and planted on new land produced a similar result. Up to the present the only satisfactory means of getting rid of the disease is to disinfect the corms by steeping them in 5 per cent. formalin for half an hour, then washing in clean water before planting in clean ground.

This brings me to the end of my general account of some of the diseases to which bulbs are liable. I have considered only one section or group of diseases, those, in fact, in which the parasitic fungi concerned form resting bodies called sclerotia, and my lecture might well have been called "The Sclerotial Diseases of Bulbs" but for the fact that to most of my audience the word "sclerotial" might have been meaningless, at least before you came here.

There are other diseases of bulbs quite as important, such as the bacterial rot of Hyacinths and the Fusarium bulb rot of Narcissi, to mention only two, which may very well form the subject of a further lecture, but cannot be even touched upon now.

I want, however, to sum up in brief form the salient points about these sclerotial diseases, but before doing so I may be permitted to say something of the work now being carried out at Wisley in connexion with these diseases. Allusion has already been made to the discovery there of a new species of *Botrytis* as the cause of the "fire" disease of Narcissus in Britain, and I may add that the presence of the "smoulder" disease, the other disease of Narcissus, caused by *Botrytis narcissicola*, was first detected on bulbs sent to Wisley for examination. As a result of the investigations of these two diseases nearly all the other forms of *Botrytis* and *Sclerotium* I have described to you have been collected and are being studied there with two objects in view—(i) to find out if some of these various species of *Botrytis* are really incapable of infecting other host plants, and (ii) to find adequate measures of control. As regards the first, I have already indicated that *Botrytis narcissicola* will infect the green capsules and stalks of the Snowdrop, and work is now being concentrated upon the *Botrytis* diseases of the bulbous Irises, which were also first recognized at Wisley, and to discover, if possible, if the *Botrytis* of Lettuces is identical (a) with that of Lilies, and (b) with that of the bulbous Irises.

As regards the second, I have drawn attention to the American work of eradicating *Sclerotium tuliparum* from Tulip beds, and it is now proposed to try the effect of formalin on soil contaminated with the sclerotia of the dry-rot disease of Gladioli.

In conclusion I wish to emphasize the important part played by the sclerotia of these parasitic fungi in the dissemination of the various

diseases I have described, and that to control them the sclerotia must either be destroyed or prevented from forming.

As a practical measure which can be adopted with the expectation that a considerable amount of disease will be prevented, I would recommend the careful scrutiny of bulbs directly they are purchased, and to reject and to burn all such as are found to bear sclerotia.

One other procedure, which has proved of great benefit in combating other diseases, is the application of potash in some form to the soil in which bulbs are to be grown permanently.

In manuring the general tendency is greatly to increase the nitrogen content of the soil, without at the same time bringing up the strength of potash and phosphates. For a long time it has been known that an increase of nitrogen alone tends to render all manner of plants susceptible to the attacks of fungi; and also that this effect may be counteracted by an increase of potash, which even by itself renders plants very much less susceptible to disease.

Therefore, a final word of advice to those contemplating planting bulbs more or less permanently. Satisfy yourselves that your bulbs are free from sclerotia, and do not plant them before you have added both kainit and basic slag to the soil *now*, at the rate of $1\frac{1}{2}$ –2 oz. of each to every square yard, and, in spring, wood ashes in quantity.

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THE WALNUT WOODS OF TURKESTAN.

By VERA L. NEKRASSOWA, Botanical Garden, Leningrad.

THE remnants of the tertiary broad-leaved (walnut) woods of Turkestan, formerly constituting one vast and uniform region, now find their only shelter in mountains, especially in the valleys of the Ferghana, Tchatkal, Pskem, Hissar, and Darwas ridges. They spread along brooks and streams where shady oases, thick with dark green and luxuriant sward most unusual in Turkestan, consequently spring up. The shade of the walnut trees (*Juglans fallax* Dode) is very helpful to the growth of different maples (*Acer turkestanicum* Pax, *A. Semenowii* Rgl. et Herd), numerous species of apple-trees bearing small but very sweet fruit, besides a great number of bushes such as *Prunus cerasifera* Ehrh., bearing yellow, blue, or red, very sweet fruit, different species of *Crataegus*, Roses and *Lonicera*, an endemic Turkestan bush, *Exochorda Korolkowi* Lav., and the curious shrub "Assa-mussa" (*Abelia corymbosa* Rgl.), out of which, says the legend, the staff of Moses was made.

In spring, all the trees and brushwood blooming, the air is heavy with sweet scents; in autumn all their branches are covered with fruits, reminding one of an abandoned orchard. A highly poetical Ferghana legend tells of a hero, Arslambob, who, having planted all these beautiful woods, was duly rewarded for his task: he lived long enough to see the Prophet.

The xerophytic character of the Turkestan vegetation is more expressed on the dry declivities of mountains covered with gramineous plants and various bushes such as *Caragana turkestanica* Kom., *Cotonaster Fontanesii* Spach. ssp. *songorica* Rgl., *C. Lindleyi* Steud., numerous species of *Spiraea* and *Rosa*, *Berberis heteropoda*, and *Crataegus sanguinea* Pall., occasionally shooting out thick and spinous branches.

Notwithstanding the walnuts being very fruitful, they are doomed to disappear, because of the dry climate of Turkestan—the glaciers decreasing, the bulk of the rivers and the quantity of moisture continually diminishes. The process is accelerated by subsidiary causes: the Kirgees herds ruin the young sprouts, and all the nuts are either carefully gathered by natives or devoured by numerous wild swine. In order to preserve some of these forestine relics, a National Park is being planned in the valley of the Arslambob River (Ferghana Mountains).

The groups of woods examined are very rich in numerous species of apple and plum trees, but of especially great price are the walnut trees (*Juglans fallax* Dode). The last yield nuts, valuable wood,

and very costly knobs of sometimes 100–600 kilogrammes in weight, swelling out on the lower part of the trunk and used for veneering work.

Another species—*Juglans regia* L.—is found in a few gorges only of the Kopet-Dag Mountains, obviously forming there the northern limit of its area. *Juglans kamaonia* (D.C.) Dode, from the Himalaya, is also found to be cultivated in local gardens.

The photograph (fig. 13) represents a clump of beautiful old walnut trees (*Juglans fallax* Dode) in the valley of Karangutung River in the Tchatkal Mountains (West Tianshan).



FIG. 13. OLD WALNUT TREES IN THE VALLEY OF R. KARAGUTUG, TCHATRAI MIS (W. TIANSHAN).

BIRCHES.

By CHAS. COLTMAN-ROGERS, Stanage Park, Radnorshire.

I WOULD fain sound the glories of Birches in general, but more especially of the Birch trees planted here in Radnorshire, upon the Welsh Marches, and in the environs of our own homestead, just adding here and there remote mention of some others that I have less personal acquaintance with.

LINNAEUS, that mighty Swede who laid down rules in the past for the botanical world, bestowed upon our British Birch the single simple specific appellation "*alba*." A good enough name, and descriptive too, many might say, and especially in reference to those well-cared-for specimens that have had their lower branches lopped in early life, and have been given a position in some sunkissed spot, where they could best work out their whiteness. These are the combined processes that produce those effects of white silvery stems and fairy forms, standing out against solemn backgrounds of dark green conifers. Let the American poet WHITTIER describe such a scene :

" And on a ground of sombre Firs
And azure studded Junipers
The Silver Birch, its buds of purple show."

In earlier days, then, our native Birches had one name only, *Betula alba*. Changes, however, will occur, and our Birch, " most beautiful of forest trees, the Lady of the Woods," became endowed with two names.

Betula pubescens, with its smooth twigs, was the name given to one, and *Betula verrucosa* to the other, signifying that its twigs were rough and rugged. When we ruminate on these two names, that owe their origin mainly to twig differences, what thoughts of bygone times are conjured up ! In school days we were taught that the fasces of the Roman Lictors, employed for purposes of driving back encroaching crowds on State occasions, were birchen made. Further, and perhaps more far fetched, it was hinted that from the Latin word "*batuere*" (to beat) was derived the Latin name of our Birch tree *Betula*, an "*unde derivatur*" I have no personal belief in, nor have I any intention here of pursuing further the etymological origin of its name. One thing leads to another, and our thoughts may travel farther afield to more modern uses. SHENSTONE, the eighteenth-century poet, tells a harrowing story of a Birchen tree which grew near a schoolmaster's dwelling. He describes the feelings that the children hard by entertained towards it :

" As they looked their horror grew,
And shaped it into rods,
And tingled at the view."

We wonder, too, did Creakle of Salem House, or Squeers of Dotheboys Hall, or even, to go a step farther, do headmasters of the present day, discriminate between the relative and effective values of *B. pubescens* and *B. verrucosa*, the one smooth, the other rough twiggèd ! Whatever decision they arrived at, we can hardly expect the victims of these processes to grow up addicted to plant worship.

In certain tropical countries I have visited, humanity seems often composed of representatives of various shades of complexion—dusky, saffron, and white. In like manner, upon the stems of Birches we come across these three shades of colour. There are many of the very white-stemmed Birches I can say but little about so far, as I have not either succeeded with, or tried them here. There is *B. utilis*, once and still sometimes alluded to as *B. Bhojpattra*, and its variety *Jacquemontii*, hailing from the Himalayas. *B. utilis* is, I think, generally regarded as difficult to grow in England. I recall a fine one growing at Castlewellan, Co. Down (Lord ANNESLEY'S), about 1912. It as grown from branches of the Dublin trees grafted on a *B. verrucosa*. I recall, too, taking away some branches to graft here, and the disappointing fact that my attempt in that direction signally failed.

B. utilis at the Edinburgh Gardens carries on its stem whiteness right out to the three-year-old wood. I am now retrying a graft of some that came via the Royal Botanical Gardens, Edinburgh.

Then there is *B. Ermani* from Japan. Of that, too, I can only speak so far from the experience of a recent collector. There is a champion specimen at Westonbirt. It is a beautiful Asiatic species, with peeling coffee-cream trunk and orange-brown branches.

Our best white trunks here are to be seen in a trio of trees planted some 14 or 15 years ago. They now stand some 40 feet high. To deal with them separately—the first one was obtained about 14 years ago under the correct name of *B. papyrifera*, or the more homely one of the Paper or Canoe Birch (for was it not from this immortalized tree that Hiawatha found material for the construction of his dugout, and lashed it with Larch strands from the variously called Tamarack or Hackmatack, the *Larix americana*, now waywardly renamed on the other side of the water *Larix laricina* ?) :

“ Give me of your roots, O Tamarack,
Of your fibrous roots, O Larch tree,
My canoe to bind together,
So to bind the ends together,
That the waters may not enter,
That the river may not wet me.”

And if his wish was granted and he escaped a wetting, it was to the Paper Birch tree he owed his dry immunity.

The second of the white-robed trio was a tree given me about 1910 by the late Lord KESTEVEN, under the name of *B. canadensis*.* This

* These evidently were grown from seeds brought back by ELWES in 1906 from Vancouver districts and collected under the name of *Lyalliana*. The word

name *canadensis* appears to be simply a synonym of *B. papyrifera* var. *Lyalliana*. The third came from BARBIER's Nursery in France under the name *B. macrophylla*, and on the whole we can describe it as sporting a fatter, fuller-shaped leaf, as a rule, than its confrères.* I can only add that I have labelled my once-called *macrophylla*, *Betula papyrifera* var. *macrophylla*, and pray of Heaven and posterity forgiveness if I have erred in so doing. Anyhow, whatever they are called, they stand out a goodly show against the skyline, like the Parian marble columns of an Eastern temple in sunny Eastern climes.

Betula japonica var. *mandschurica* (No. 4088, E. H. WILSON, 1910-12 Expedition).—So far we have traversed the more worn ground of trees well known, about which he who seeks information can find it in plenty. We will now turn to the more untrodden ways of new Chinese importations and proffer a few remarks on our experience upon them. WILSON's number 4088, grown from seed brought back with him in his 1910-12 expedition to China, was called *Betula japonica* var. *mandschurica*. In WILSON's "Field Notes," privately printed in 1911, we find it described briefly as a tree growing from 30 feet to 75 feet high, and girdling from 5 feet to 8 feet. Leaves small ovate, acuminate; catkins 1 to 1½ inch, cylindrical; bark grey. The leaves on our trees are from 2½ to 3 inches long and from 2 to 2½ inches across at the broadest point, and I should describe their shape as either ovate or cuneate. They are hardly small either as Birch leaves go. Then the colour of the bark in our specimens displays the same white—and even more brilliantly white—clad stems as the best of our native Birch trees. In justice to Mr. WILSON we must add that in a later description he alluded to it as in appearance resembling the North American *B. papyrifera*, but with a bark more persistent and not so white, and then he proceeds to say that the outer layers of its bark are used for lining straw hats. The grey, in fact, on the second thoughts of his renewed acquaintance, had turned to white. More often is it the case that Birch trees reverse this order, and the white of youth becomes the grey of old age. Probably the first trees that WILSON came across were old stagers.

One more word about the degree of trunk whiteness attained by this tree. In the time of VIRGIL two adjectives were used to denote whiteness, "candidus" and "albus." Candidus had a candescent, burning fiery ring about its composition, as an adjective, and so was used to describe anything bright and shiny, while "albus" was used to express a more colourless effect, and was loosely translated as snow white. I think that any dispassionate observer on looking at our *B. papyrifera* and our *B. japonica* var. *mandschurica* would agree to describe them alike as "candidus." After all said and done, this clash of colour in Birch-tree trunks is but a visual definition, not a fierce *canadensis* was probably employed by mistake at the time of the gift, and the word *occidentalis* intended. It is, however, an old synonym of *B. papyrifera*.

* The leaves of the tree here measure 3½ inches long and 2½ inches wide, that is to say, some half inch both ways more than the limit of size usually ascribed to the ordinary *B. papyrifera*. The leaves too, in my tree here, are rounded, not cordate, at base. Another name given to this larger-leaved edition has been *B. papyrifera* var. *grandis*.

racial question, as in some parts of our combative world. Our trees are now (1926) about 15 feet high and 15 inches in girth. Their leaves answer WILSON's other descriptions of them; they are glabrous, with short and regular dentation, and have the widely spreading branches that are among the characteristics of the variety as described by him. One other point that is annually noticeable: they leap into their spring suit of green in company with the Balsam Poplars, and such early precursors of summer days, and a week or two or more before our more leisurely native deigns to don its summer robes.

ELWES and HENRY record *B. japonica* as a variety of the English *verrucosa*. Who knows but what some Japanese authority, burning with the patriotic passion of retaliation, may not arise and label our home-grown *B. verrucosa* as a variety of the Japanese? From *B. japonica* to *B. japonica* var. *mandschurica* does not sound a very far cry, even if it intimates geographical separation. Maybe, as they tell us, the variety has more glabrous leaves and one or two such trifling differences. I can only say that ostensibly, at a short distance away, in form and feature, the new No. 4088 bears an uncanny likeness to our *B. verrucosa*, as confusing a likeness, in fact, as that of the twins described in the well-known poem. Anyone might be pardoned for mistaking, at a cursory glance, each for one another.

One, perhaps trivial, peculiarity I should like to call attention to, which may or may not be worthy even of allusion, and which may or may not be of universal application to the tree in question. I have seen a good few of them now, and in three or four different places, besides those growing here. All of them show a slight incline, half-way up their stems, from that strict rectitude of form which other members of their family are, in general, wont to display. In their carriage they seem to affect what the mid-Victorian music-hall artistes were wont to signify in song as the Grecian bend. Whether this kink is general or only an accidental incidence in those I have seen, I cannot say.

Betula albo-sinensis (No. 4106, E. H. WILSON).—We will now, for the time being, take leave of the All Whites, but before we come to the darkies and darkiest we have to deal with that intermediate stage whose trunks we may variously describe, according to our ideas of colours, as brown, grey-brown, olive, bronze, orange-red or cinnamon, or by any other name that accords with your eye for colour and your ideas of expression, for such betwixt and between coloration.

The particular one before me is one of his most attractive importations. I think I should describe the colour shade of its exfoliating bark—so far as I can describe the chameleon changes—as brilliant orange-red, and perhaps a little paler as it peels.

Wise men of the botanical world, a long time since, told us that to raise Birch from seed was no soft job. Certainly the raising of this particular specimen did not turn out to be a very prolific undertaking. Out of the four or five that germinated here, two only have survived. From a personal point of view and when I have said what I am going to say, I have spoken in its praise all in my power to say, if anyone

were to offer to transplant me here a good Birch tree as a birthday present, I should select either a *B. papyrifera* or this No. 4106, and as the one sets off the other, I should hint to the donor to double his offer and make it two.

There is a beauty growing at Werrington Park, Launceston (Mr. A. M. WILLIAMS). Its orange peeling papery bark, shining like burnished copper, leaves behind it a creamy glaucous bloom that puts one in mind of a similar effect obtained from that rare maple *Acer griseum*.* It was found, or perhaps rediscovered and collected, by WILSON in the Chinese provinces of N.W. Hupeh and N.E. Szechwan during his 1910-12 expedition. In his earliest brief "Field Notes," in which he was very sparing of any comment, he described it as a "magnificent bush." Still, so far, here and at Werrington Park, it grows in orthodox tree form.

Again, we see amongst its aliases and synonyms the everlasting description of *B. utilis* and *B. Bhojpattra*, whereas nothing could be more different to look at than, say, the *B. utilis* at Castlewellan and the *B. albo-sinensis* here. Why they even drag in the word *albo* in its designation puzzles me again. *Albo* gives us the idea of something white. There is nothing white in this tree, unless by a stretch of imagination you connect this cream-coloured glaucous bloom, left after the outer layer has peeled off, with a white appearance. Its leaves are small and it comes into leaf a little later than *B. japonica* var. *mandschurica*. They are ovate with serrated margins, about $1\frac{1}{2}$ to $1\frac{3}{4}$ inch long, a little less than 1 inch wide, leaf stalks $\frac{1}{4}$ inch and catkins very long, some 3 inches. The leaves of this Birch are apt to vary according to the conditions under which it is planted. At Werrington Park the leaves, in the more luxurious positions of shelter and soil, are larger and measure 3 to $3\frac{1}{2}$ inches long and $1\frac{1}{4}$ inch wide, while those in more exposed situations measure 1 to 2 inches long and $\frac{3}{4}$ to 1 inch wide, and those in sheltered places show a more decided tendency to doubly serrated margins.

Betula albo-sinensis var. *septrionalis* (No. 900, E. H. WILSON).—E. H. WILSON has something to say about what he describes as a "presumed" variety of his tree numbered 4106. The variety in question has been christened *septrionalis*—a fine, high-sounding name.

It is, I confess, an unenterprising remark to make, but just now, with all these budding new arrivals, I almost feel we have more than we can try and do with, without making a further effort in trying to cope with yet another stranger, presented to us by its discoverer, with such a discouraging and disinheriting title as "presumed."

The tree, if it some day establishes a claim to recognition as a distinct variety of *albo-sinensis*, appears from the name given to it to hail from higher regions, and to be more Boreal than its Boreal next-of-kin No. 4106. At present it poses, in assertion of independence, under the protection of a registered number of its own, namely 900 or

* Or that more newly arrived *Prunus Cerasus*, named *serrula*, which displays the same brilliantly lighted, copper-coloured, and peeling bark that these two show.

900A, E. H. WILSON—the name *septentrionalis*, I take it, is intended to convey the impression of northern origin.

Its bark seems to me to resemble more nearly the bark of *B. utilis* var. *Prattii* than that of the *albo-sinensis*. The leaves of *albo-sinensis* do not appear as markedly doubly serrate as those of the *septentrionalis*. The leaves of *septentrionalis* are $3\frac{1}{2}$ inches long and $1\frac{1}{2}$ inch wide. My *albo-sinensis* leaves measure $1\frac{1}{2}$ inch long and $\frac{3}{4}$ inch wide, but see the dimensions of the leaves of the Werrington trees.

Betula utilis var. *Prattii* (No. 4087, E. H. WILSON).—This is another new Birch that displays a very attractive stem colour scheme, which I should describe as lustrous bronze. Seed was collected at the latter end of 1910, and it is found chiefly on high mountains in W. Szechwan.

Again the Utilitarians, I mean the dispensers of the title *utilis*, have been at work in its naming. I own I am thoroughly mystified by the lavish bestowal of this name *utilis* on so many *prima facie* unalikes, in spite of such marked differences in the most striking part of their anatomies. I refer to their trunks, which, say what you will, are far and away their outstanding feature and, as E. H. WILSON writes of them, “deserving of more notice than is generally accorded to them.”

Maybe it is all right and explainable, and that there are some hidden reasons, on scientific grounds, for the recurring allusions they make to this all-pervading word, but it is very puzzling. Because I lay stress on the trunk differences of these Birch trees I am not, be it understood, in any way unmindful of either the beauty or significances of their leaf structure, or the network of their elegant branch system. *Altiora peto*. To employ a musical analogy, the higher parts of these trees stand as graceful descants above to melodies below. I recall, too, another tribute to their leaf beauty, from TENNYSON, in his poem on old Amphion :

“ The Birch tree swang her fragrant hair,
The Bramble cast his berry.
The gin within the Juniper
Began to make him merry.”

Anyhow, *Prattii* is a very fascinating tree. Its leaves, like those of *B. ulmifolia* and others, are as ribbed as is Hornbeam's foliage, and are from $2\frac{1}{2}$ to 3 inches long, from $1\frac{1}{2}$ to 2 inches wide, slightly heart-shaped at base, acuminate at apex, and leaf stalks the better part of $\frac{1}{2}$ inch, with ten or twelve lateral veins ; stems glabrous. At least this is what I make of my best tree, the identification of which has been corroborated by the Kew authorities. The bark has begun this year to display signs of layers peeling off, but only high up on the stem. Where it wins its place, in the esteem of sightseers here, is in the lustrous bronze tint of its stem, with well-marked lenticels, a bronze, too, that looks to contain, in its alloy, more copper than tin.

No. 4089, E. H. Wilson Expedition 1910-12.—There is yet another arrival by the same boat, by the same consignment, from the same locality, and discovered at pretty nearly the same date as No. 4087

B. utilis var. *Prattii*, and No. 4088 *B. japonica* var. *mandschurica*. These numbers 4087, 4088 can be met with in limited circles of course so far, but still in comparatively fair plenty, and if sought for in the right places. But No. 4089 rather defies searchers, and is as elusive as that hero of fiction the Scarlet Pimpernel. "We seek him here, we seek him there," in fact we seek him everywhere, but fail to find.

One and one only No. 4089 has it been my destiny to confront, one with the number affixed, and with other corroborative evidences of identity of its whence and whither, and that was at Werrington Park.

Unnoticed, unremarked upon, with only a number to distinguish it, shrouded as the hidden identity of a nameless convict, it has crept into existence, and grown up in a garden corner of Werrington Park.

The cause of this infrequency of appearance, I take it, must be an invincible obstinacy displayed on its part to germinate freely. Mine, at any rate, failed.

Again I look at my book of reference entitled "Field Notes," E. H. WILSON, 1911, and I find No. 4089: "A new species. Leaves pubescent. Catkins woolly, $1\frac{1}{2}$ inches long." This accords pretty well with my version of its description, except that the catkins are 1, not $1\frac{1}{2}$ inch long. If we take the dates of their findings, we learn that in September 1910, in W. Szechwan, some 10,000 feet above the level of the sea, WILSON discovered a Birch with a grey bark, which he numbered 4089. In the same month he also found and sent home seeds of a white-barked Birch, which he numbered 4088. This is the tree now given the name of *B. japonica* var. *mandschurica*. The leaves are quite different from those of the Nos. 4087 and 4089, glabrous and wedge-shaped, sometimes truncate, at base.

In October 1910 WILSON discovered in the same locality a tree he numbered 4087, with, as he described it, dull orange bark. We find it sometimes with a bright lustrous bronze bark. This tree has been christened *B. utilis* var. *Prattii*. No. 4087 and No. 4089 certainly have a strong leaf resemblance: leaves about the same length, i.e. $2\frac{1}{2}$ inches long and nearly 2 inches broad, with a round or slightly cordate base. But it is their barks that differ, if we are to take the one specimen I know as typical. The bark of this tree is of a dark ashy-looking grey, and this sounds pretty much as WILSON describes it, while No. 4087 has a brilliantly coloured bark which gives the effect of lustrous bronze.

So far, then, it seems that No. 4089 will turn out to be the "tertium quid" of the trio of better-looking brothers all emanating from the same countryside. Perhaps, too, No. 4089 is destined to perform an inglorious disappearance into space, as far as we are concerned unnamed, unhonoured and unsung, and to be to us as if he never had been.

Betula Maximowicziana.—We now come to the Birches which display the dingier, darker trunk, and when I say this I would qualify what I have said and what I shall say by the remark that variability of shade in the same specimen in different places may exist, and that this may be attributed to the position it is planted in, shade or sunlight, to

say nothing of the points of the compass, and the nature of the soil, where it grows. The bark, then, of the same species may very well vary, according to such circumstances, from ashy grey to duskier and darker hues. Among the ashen greys, though I have seen it described elsewhere as trunk smooth and orange, I should place *Betula Maximowicziana*, and in so doing I am only describing trees I have lately seen at Westonbirt and Hergest Croft. On the other hand, it should be added that the papyrus coating of the trunk, when peeled off, certainly displays a cinnamon-coloured tint. It is a tree that has won for itself a good deal of admiration, and many are loud in their praises of it. It has been lauded, and even called "magnificent." Let me try to describe it. Firstly, as a Birch tree, it excels in height. A native of Japan, it was only introduced by Prof. SARGENT in 1893. It excels in the magnitude of its leaves, sometimes 6 inches long, and they are very convincingly heart-shaped at base. Its branches excel, too, in the bravery of their long pendant 6-inch ornamental fruiting catkins, which hang down like the jewelled earrings of an Oriental queen, and yet with all this I prefer personally the bright white *B. papyrifera*, with its gracefully foliated head of lesser leaves. *De gustibus non disputandum est*. At the same time I would testify in humble judgment that the *Maximowicziana* is an ornament to any Birch grove, and a tree not to be without.

Betula Medwediewi.—Another of my happy experiences is a young tree, hailing from regions south of the Caucasus Range, called *B. Medwediewi*. This is a plant that no one can call attention to on account of the colour scheme of its trunk, for the simple reason that it only measures some 8 inches; but those 8 inches are decidedly swarthy. From this apology for a stem, at that humbly exalted height, branches spring in profusion, nearly vertically.

My old friend of school and Oxford days, Mr. VICARY GIBBS, describes *Betula Medwediewi* as a tree of large and cheerful green foliage, and of a stiff pyramidal habit. Substitute for pyramidal, bush or corymb shape, and I will not gainsay the cheerfulness ascribed to its leaves.

I came across one at Hergest Croft, Kington, which has the same candelabra growth as mine. Its leaves are noticeably large. Those on my tree measure over 3 inches in length and are $2\frac{1}{4}$ inches broad. I daresay some may be found to be slightly larger than that, but I am only talking of my own specimen. They are irregularly toothed, pointed at the apex and rounded at base, though it is said they sometimes incline to a heart-shaped base. The leaf stalks are hairy, and about $\frac{1}{2}$ inch long. The erect catkins, quoted by authorities as from 1 to $1\frac{1}{2}$ inch long and over, seem in the case of my specimen larger. I measured one to be 3 inches. If placed in the background of a well-trimmed-up white stem, say of *B. papyrifera* or any other white-stemmed representative, they make a good contrast. Their place is rather in a background, but, let me add, there is nothing derogatory in such a position. Many pictures and all landscapes are more dependent

on their middle distance and backgrounds than on their foregrounds. There is one point to be considered by the prudent planter. It is a tree that looks as if it will require protection, for ever and aye, from grazing animals. The branches grow so near the ground that they offer an irresistible temptation to ruminant rovers.

Betula populifolia—*The Grey Birch*.—I am afraid I hold no brief on behalf of this member of the Birch family. I entertain this sort of feeling in regard to it: if you felt an impulse to plant a little grove of Birch, and if you were called upon to pronounce judgment upon their various merits, and demerits, from the same sort of point of view as you would, for instance, upon a collection, say, of ponies, or cattle or sheep in a show-yard, this is the tree, after first time round, I would unhesitatingly relegate to the back row squad. Its bark is a dull unornamental grey. Its foliage is certainly nothing to rave about, at least as anything out of the common. Indeed, it was once accounted a variety of our home-grown tree. The leaves are acuminate at apex, and of a deltoid shape, good enough, but no better to behold than any other Birch tree.

The tree derives its name, I take it, on account of its leaf likeness to the Black Italian Poplar.

The end of our best home-grown *B. populifolia* was brief and tragic. A strong north-west wind came one day, smote our tree amidships, and snapped him in twain. Whether the companions in his group,

“ With solemn groan
And hollow moan
Lamented a comrade's fall,”

I am not prepared to say, but that it did not cost any of our human family circle an outflow of salt tears I am ready to affirm. My remarks, I am afraid, do not flatter this tree. Others there are, who, following the better traditions of criticism by first looking for merits before searching for defects, have said a good word or two for it.

They have told us that it serves certain purposes. They say that after a forest fire it arises again like a Phoenix from ashes. They say that it makes a good nurse in a plantation (rather an ephemeral compliment!). They say it thrives in places wet and wild, that it occupies desolate lands, but I am afraid that the planting of it anywhere in wet or dry would hardly be deemed an undertaking calculated to fulfil the mission of Ezekiel's idealistic vision: “This land that was desolate is become like the garden of Eden.”

Betula nigra, or *River or Red Birch*.—In honour of a name, *B. nigra* should be accorded a premier position among the black barks, and take the rank of Prince of Darkness. Though it is a tree that possesses many names, from many authorities, to wit, Western, Black, Black Virginian, Cherry, Red, Canoe and River Birch, I cannot ascertain that any such regal title as suggested has ever been assigned to it. Like *B. lenta* and others, its bark is accredited with the flavour of cherry, and further physically described as black and rugged.

One I have just looked at, belonging to W. H. BANKS of Hergest Croft, Kingston, and planted, I believe, some 15 or 20 years ago, I should describe as ragged rather than rugged, and the colour scheme of the stem as black and cinnamon. The leaves, which appear late in the spring, on this tree were about 2 inches long, rather less than 1 inch wide, giving the idea of one of those rather small leaved newer specimens that do not take so kindly to our climate. It is the bark that rather staggers the tree lover of beauty perfection at first. It is quite the untidiest looking spectacle you could chance upon, except perhaps on the unshaven face of an unkempt tramp.

Observers of the Fox Tail Pines will remember that they are remarkable for the way the basal sheath of their leaves breaks away, and presents the appearance of a torn riband, and after that forms into a rosette. Magnify such a basal sheath into the size of a 15- or 20-year-old *Betula nigra* stem and you would be confronted with a similarly tattered sight.

I believe *B. nigra* is a tree you seldom come across in our country's private collections. If you did come across it, I cannot imagine that it would be one that you would pick out, mark down, and yearn to add to your little lot, not anyhow if you preferred to rejoice beholders' eyes by scenic, rather than weird, effects. If you elected to try one as a curiosity, or if it was your aim to attain a complete collection of every sample of the genus, well, that is another question.

Their leaves are ovate, wedge-shaped at base or, as some authorities have described them, of diamond shape, doubly toothed, glaucous underneath, with from 6 to 9 pairs of lateral veins. Rivers, ponds, and other wet places are haunts that appeal to their rather amphibious nature.

Betula lenta—the Black or Cherry Birch.—From *nigra* to *lenta* to some might not at first sound a far cry, if a once identity of name went for anything, for *B. lenta* is called the Black Birch, and *nigra* translates "black." A little further investigation would disclose the fact to you that their leaves, their barks, their habits, their everything else, are just as much at variance as Poles asunder. I must, however, explain that, though *Betula lenta* once included the title of *nigra* amongst its aliases, *Betula nigra* included the name of *lenta* amongst its lesser list of Latin synonyms. *B. lenta*, too, among all Birches, takes the prize for the longest list of names bestowed upon it. I will enumerate them or those that I have found in authoritative writings: Pliant (i.e. *lenta*), Black, Cherry, Canadian, Sweet, or even Mountain Mahogany, in deference to the excellent qualities of its wood. Other excellent qualities are also ascribed to it. We read that by fermenting the sugary sap a beer was made from it, an additional attraction to any tree merits hailing from a prohibitionist country.

It is a tree, then, it must be admitted, that possesses certain hidden merits, beneath a not out of the way fascinating exterior. I have also come across evidence that at a more remote period it was

called dusky, and unexplainedly "Popular"—not Poplar—leaved Birch, but I refrain from sheer inability to throw further light on this nomenclature—possibly a printer's error!

Its leaf has been described as gracefully ovate, although its outline, as I see it, does not in any way bear resemblance to the tubbier shape of our farmyard hen's products. I always rather cavil at the description ovate, for most people have only such hazy notions as to which is the right upside and downside of a hen's egg, consequently such words as "ovate" and "obovate" leave a sense of confusion. Perhaps if you must drag in the word "ovate," ovate-oblong would better describe the shape of this Birch-tree leaf. Further, the leaves from my specimens and the big tree at Oakley Park may be described as inclining, not markedly, to heart shape at base, and sharply, sometimes double toothed, and acuminate at apex. Ours are some 3 inches long, and sometimes I believe are found nearly twice as long, and generally about half their length wide, and veins, again in our tree, eleven pair. Catkins 2 to 3 inches long. Its leaf attire is its prime attraction. Its bark is smooth and dark in young days, and red and rough in old age. Mr. W. J. BEAN speaks of it as not a good doer, and that is my experience yet of it here.

A champion *B. lenta* mentioned in ELWES and HENRY'S book, "The Trees of Great Britain," grows not far from here, on the banks of the river near Ludlow in the garden at Oakley Park, belonging to Lord PLYMOUTH. I went a short time ago to revisit the shrine of this Temeside champion. I cannot say conscientiously that I was struck all of a heap with it, as much of an added ornament to the water-side of a river I know so well, love, and have lived by, hunted otters in, and foxes by its banks. To me, in spite of quite an attractive leaf covering, it represented just a gloomy, lugubrious member of a family that we were always brought up to look upon as gay and debonair.

Its trunk was dusky, dark and grim, of a nondescript dark grey, not red and rough as before described; no peeling papery-white bark, the glory of its tribe; no lustrous bronze, but just a dull dark grey, belichened and uninteresting trunk was all there was to greet the eye. It does not seem so fitted to fill our eye and brighten our lives by any trunk appearance, as to produce a contrary and more desired effect by its leaf display.

Betula lutea—the Yellow Birch.—When I have completed this little impressionist sketch of the *Betula lenta* there remain but very few touches in the matter of lights and shades to put in upon the picture of *B. lutea*. They certainly bear a very strong family resemblance. I have the leaves of both before me. They are of much the same shape, with the same leaf margins, the same number of lateral veins, the same silky hairs on their young branchlets, but perhaps displaying a lighter, paler cast of colour, both on their twig and on their leaf surface. Again, both seem to have been introduced to our shores at the same time, "When Good King George the Third was

King." Nor is this surprising, for they both hail from the same countryside, N.E. America.

Where then, we begin to wonder, to ask ourselves, do the differences between those two very much alike, *B. lenta* and *B. lutea*, come in? True there are some tweedle-dum, tweedle-dee minor catkin points on which they differ, but that does not go for much to many. It is the trunk from whence must come our help. The lighter colour of the leaves has already been mentioned, so also must I go on to say that it betrays the yellow streak in its bark, and inclines, anyhow in its young days, to an olive or bronze tinted stem colour as the outer layer peels off. Meanwhile the short branches and branchlets are dark and smooth, and strike out some 8 inches above ground from the main stem in verticillate growths, at least so do two out of the three trees growing here. The third effects its strike out from the main stem higher up, forming a bushy clump-headed top. These are the apparent characteristics of the 14-year-old trees here—I do not pretend to say elsewhere, for I have not knowledge of many. Very few, I think, have. Alas, you do not meet rareties in everyday walks; I often wish I met more, and that I was young enough to walk and seek farther afield. *B. lutea*, like *B. lenta*, boasts its little trail of *alias* names. Besides the one most in use, yellow, there are added, as applied to it, such rather unmeaning names in various localities as Grey, Silver, Swamp, and White. The traders from Newfoundland, who revel in wrong designations, call it Witch Hazel.

The old French and Quebec name, 'Merisier,' or 'Merisier Rouge,' which denotes a Cherry tree, is still, I believe, used at times, in recognition, I take it, that its claim to the cherry flavour characteristic had been established.

Betula luminifera.—This is a Birch tree that, I take it, is seldom come across, so far, in private domains. It is a low-level Birch, so says E. H. WILSON, of W. Hupeh and Szechwan (China), and from variabilities observed seems rather to have got upon the nerves of would-be describers. Indeed, as I try to unravel their accounts of it, I feel a craving for more luminiferous information, and inwardly pray for "Light, more light."

Though they call it a low-level Birch, WILSON is recorded as having communicated the contradictory fact that he had seen a large 100-foot-high specimen at an altitude of 8,500 feet. I suppose that, relatively speaking, high and low depends very much upon what side or part, or in what latitude, the place described is situated. We, for instance, would hardly call twice the height of Ben Nevis low lying, or even any other such similarly situated spot, for the matter of that, on our side of the world.

I will now make an attempt, from writers, to get some sort of idea of the family circle to which *B. luminifera* belongs. WILSON appears to associate the so-called *B. luminifera* with a tree called *B. alnoides* var. *pyrifolia*, a variety of the Himalayan Birch called *alnoides*.

ELWES and HENRY announce a certain indefinite relationship as existing between it and the Japanese *Maximowicziana*. Whether or no this claim of kinship will in future days be sustained, it would be idle for any one of such humble pretensions as mine even to speculate upon.

The leaves of the *B. luminifera* that I have before me, from Mr. W. BANK's tree, measure from 3 to 3½ inches long and 1½ inch at their widest width. They are rounded at base, not in any way cordate, and very lengthily acuminate at apex, while *Maximowicziana* leaves are larger, rounder, broader, more acute than acuminate, and shortly acute too at apex. Besides presenting a totally different shaped leaf outline, they are of a totally different colour. The leaves of *B. luminifera* before me display a very marked red tint, a little gift of nature that I think indicates a sure and certain promise of popularity in days to come. Its clustered catkins are more than 3 inches long.

I cannot say as much, as I own only a brief acquaintance, for the same probability from any trunk attraction. The name given to it, *luminifera*, or light bearing, seems to have been bestowed upon it, if we were to judge it from the trunk only, rather on the principle of what we called, in our so-called education days, the "Lucus a non lucendo" idea.

Its bark certainly looks anti-luminous, and particularly dark and gloomy. It has been described by its discoverer as firm, smooth, dark red-brown, turning yellow-grey in older age. Someone looking at it at the same time with me ventured the observation in a desire to praise, that he considered it contributed to the scenery around, a sturdy, robust, independent and masculine appearance, but added that he did not think it would ever have evoked from any modern Poet Laureate the appellation of "Our Lady of the Woods."

However, no one can deny that besides a good carriage and a most attractive leaf attire it bears a pretty sounding name, *luminifera*, a name that falls as pleasantly on our ears as the magic word Mesopotamia exercised on the old lady's traditional ecstatic senses. The colour of its leaf seems its great asset, and certainly ought to tend towards its continued existence in our collections.

Betula alnoides var. *pyrifolia*.—I have before me some leaves of a little plant from Werrington Park, Launceston, that claim to belong to the supposed by some more tropical species of the North Indian *alnoides*, to which the name *B. alnoides* var. *pyrifolia* has been assigned.

In leaf shape the two I am discussing, one posing under the name *B. luminifera*, the other said to be a more Southern representative, namely, *B. alnoides* var. *pyrifolia*, seem to be as alike as alike can be.

As things stand at present we must await guidance as to what name will be conferred on the Birch found in 1900 and brought back in 1901 by WILSON, and then again in 1907, from seed collected mostly in W. Hupeh, also in N. Szechwan.

We read in "Hortus Veitchii" of some measurements of trees seen. One 80 feet high and 8 feet girth, Chang-yang-Sien, growing at an altitude of 4,800 feet in January 1909, seems to be the champion find

of a variety tree, the type species of which grows in Northern India and Upper Burmah.

Our home authorities do not seem to have come to a satisfactory conclusion of how we should inscribe our label on this tree. While ELWES and HENRY announce and describe a tree of the name of *luminifera*, so named by WINKLER, first found by FARGES, introduced by E. H. WILSON 1901, W. J. BEAN, on another hand, only acknowledges the name *B. alnoides* var. *pyrifolia* (Franchet), and makes no mention of the existence of the name *luminifera*.

I cannot end this summing up of conflicting evidence without dragging in what E. H. WILSON has to say on the subject in his "Plantae Wilsonianae." He mentions having come across in his quest a *Betula* he calls *luminifera*, and another he calls *alnoides* var. *pyrifolia*. The former represents the more northern, the latter the more southern, geographical habitat. There the matter must rest.

In the circumstances, we shall crave licence—perhaps only a time expiry licence—for the time being anyhow—to call this smooth-trunked, large and Tyrian purple tinted leaved tree by whichever name we please, *luminifera* or *alnoides* var. *pyrifolia*. I prefer the former—it is prettier, though I would back the latter to prevail in the long run. I confess I cannot see much application in either name, but that is a subject I will not air any further captious comment on here.

Betula Schmidtii.—My remarks upon this tree shall be derived from two sources—(1) WILSON's description of it in "Plantae Wilsonianae," (2) from the very limited source of my own experience.

WILSON describes the tree as remarkable, rare, lofty, thick-trunked and branched, all of which attributes are more concerned with middle age than extreme youth. Its habitat is Japan and Korea. The bark—and that is why its place in my narrative comes in here—is black and "falls off in small plates of irregular shape." Whether by this irregularity of habit any likeness is implied to that tattered and untidy appearance which the *B. nigra* presents under similar circumstances I am unable to say. Further characteristics are its stiff and erect catkins. Undoubtedly it is a remarkable and rare tree, from testimonials received. My specimens here were numbered 10659 (E. H. WILSON) and named *Betula Schmidtii*. I see two other numbers attached to their names in "Plantae Wilsonianae"—7687 and 6741.

So far, their life's journey here has been of a too brief duration for me, or anyone else, to enter the witness box and give evidence of any value upon their merits or demerits, or even attempt prophetic speculation upon any future state, or shape, they may assume in the days to come.

The leaves I have before me are 3 inches long and about half as wide at base. They are doubly serrate, rounded at base, lengthily acuminate at apex, and sporting six pairs of lateral veins. The leaf stalks are very short, $\frac{1}{2}$ inch only in length.

The twigs are very visibly tomentose, and thickly covered with

white fluffy hairs. In spite of its dusky trunk this black-barked Birch shares the same synonym as the creamy-white stemmed and white branched *B. utilis* or *B. Bhojpattra*. We begin to think that anyone might be well pardoned if he mistook the designation *B. Bhojpattra*—so often does it occur—for a description of some sort of "Welcome Club" or even "Travellers' Club," open to all wandering Birches from Eastern heights.

In the leaf there may be some resembling traits and similarity of shape, though those of *Betula utilis* are not quite so elongated as are those of *B. Schmidtii*. Its leaf stalks, too, are twice as long. The bark and stem characteristics of this *Betula Schmidtii*, according to all accounts—and they, I own, are few and sparse—must be strikingly outstanding. One other attribute claimed by its belauders should not pass by without a reference—its wood value bears a high reputation.

B. chinensis.—History, experience, and even the discoverers, so far throw but little light upon any expectations we are to hope for in attempts to cultivate this lately found tree.

As far as is hinted of its family history, it is accredited with some sort of subsectional relationship to others—also so far rather nebulously described kinsmen—that go under the names of *Delavayi* and *Potanini*. By other authorities we are told that in its wood and bark *B. chinensis* displays a resemblance to the *B. Schmidtii*. While the Koreans call *B. Schmidtii* Paktal, they designate *chinensis* colloquially as the lesser Paktal.

We also read in authoritative writings the rather upsetting suggestion that the so-called lately come *chinensis* No. 10707 is in reality an old friend masquerading under a new name; that it is the same as a tree formerly known as *B. exaltata*, a tree referred to in "Hortus Veitchii" in 1877 as being the same as *B. chinensis*. This intelligence is upsetting, because our trees, so far from giving any promise of soaring ambition, or claiming to be numbered among the exalted, are quite the creepiest crawlers so far, according to their present mode of growth, I have come across.

Yet another relationship has been claimed for it, and a sort of mésalliance resemblance to a tree called *B. davurica* attributed to it, a relationship which raises a puzzling problem. According to the classification of Asiatic Birches in "Plantae Wilsonianae" (*Enumeratio Betularum Asiae Orientalis, nec non Himalayae*), while *B. chinensis* is accorded position there in subsection Chinensis of Section Costata, *B. davurica* appears in another camp altogether, and is relegated to a sub-section named Davurica of the Section Excelsae.

Another piece of information vouchsafed us is that while the branchlets of the *B. davurica* are "sparsely pilose," the branchlets of *B. chinensis* are "silky villose"—minute particulars that would be apt to deter an amateur enquirer from indulging in any further such searchlight quests, and cause the faces of would-be students to turn pale.

My story of a transaction with the seed of the so-called *B. chinensis*, and my brief experience of attempt to grow it, is soon told. In December 1918 I received a gift of seeds, numbered 10707, E. H. WILSON, Japan Expedition, under the name, rightly or wrongly given, *B. chinensis*. They germinated freely, but hardly thrived freely. A good many transplants died. Those that survive, so far show a bushy, low, stemless, straggly tendency. They come into leaf late. Their leaves are smooth, ostensibly, but with white hairs along the ribs and a few scattered over the leaf surface, from six to eight pairs of lateral veins and reticulated, acute rather than acuminate. I might also note the presence of larva and insect life on the leaves, which up to now I have not been able to identify. Leaves are unevenly serrate, not doubly serrate, and the largest so far measures a trifle over 2 inches in length and about $1\frac{1}{2}$ inch at the broadest part. The leaves vary in size, and this is an instance of the largest. Their youngest twigs are light coloured and turn to red later. They are villose covered with white hairs. At present they look like a stemless bush, and this is my story of them, as far as it goes; unsatisfactory, I own, and neither conclusive nor exhaustive. If it evokes critical comment, so much the better for many of us. We may learn something.

Betula Delavayi var. *Forrestii*.—*B. chinensis*, as I have stated, comes under a subsection called *Chinensis*, and this subsection *Chinensis* also includes the so-called species, *B. Delavayi* and *B. Potanini*. They again in turn break out into varietal forms.

There is a small tree growing under this name at Endsleigh, Tavistock, Devon, that I have seen and, I own, envied possession of. It certainly seems to display a very outstanding individuality of leaf structure and colour shade. In shape and sheen, with a very little stretch of imagination, the leaf surface seems to bear a *prima facie* resemblance to the well-known wayside and streamside White or Abele Poplar (*Populus alba*). *Prima facie*, I said advisedly, since on further inspection it is easily seen that the Birch has neither the white leaf stalks nor the white leaf under-surface that goes to make the glories of this Poplar, but it certainly shows a similarity, in its maple-like lobate leaf shape, with its undulate serrations, to say nothing of a glistening colour shade in common on its silky upper leaf surfaces.

The leaves of this Endsleigh tree before me appear very large, as far as Birch-tree leaves go. They measure a full $3\frac{1}{2}$ inches long, at their broadest width from lobe to lobe the same length. They are slightly inclined to be cordate at base. The stalks are $\frac{3}{4}$ inch long, and the lateral veins number some seven pairs. This variety was discovered by FORREST in Yunnan, in 1910, at an altitude of about 10,000 feet; so runs the story, as far as I can make out, of its introduction to our shores. The number alluded to in "*Plantae Wilsonianae*" is 5546, and the number I have with them is 1466. I have a small tree growing here from seed given and numbered 26896. It is, so far, in the pot stage of life. Although a smaller edition of this *B. Delavayi* var. *Forrestii*, with a length and breadth of leaf only 2 inches,

as against the $3\frac{1}{2}$ inches of the longer and larger grown Endsleigh tree, in shape, colour, shade, and other respects they bear a strong resemblance one to the other.

Three other little—to me mysterious—Birches are growing at Endsleigh. Their leaves and branchlets are before me, upon which too, I am afraid, my remarks will be far from illuminating, and my observations hardly worth the briefest record.

The first is numbered FORREST 15381. In leaf alike, the nearest I can get to it is WILSON'S No. 4087, *B. utilis* var. *Prattii*. It bears a not far removed leaf likeness to the *B. utilis* of the Himalayas or again the *septentrionalis* variety of *albo-sinensis* (E. WILSON, No. 900).

The second is numbered 3. Is this a FORREST number? I believe so. The leaf anyhow shows a marked individuality of its own in one of its characteristics. It is as sessile or closely adpressed to the stem as the leaves of a Pedunculate Oak, leaving just enough room between foliage and stem for a tiny bud to squeeze itself in. The only other stalkless Birch that I can call to mind—and I have the leaves of some thirty Birch trees before me to go by—is the otherwise perfectly differently equipped *B. Medwediewi*, and even that has less of an apology for a stalk than this No. 3. The leaf is $2\frac{3}{4}$ inches long and $1\frac{1}{2}$ inch wide, acutely tipped, doubly serrate, rounded at base, and, in short, otherwise than its stalklessness very like a great many others. But the brevity of the stalk ought to ensure it some day the honour and independence of a name.

Then there is one more, from the same place, Endsleigh, labelled No. 44, also, I take it, a FORREST number. I will try to describe it. It has the rough dentation of a *B. utilis*, the cordate base of a *Maximowicziana*. It is longer in leaf length (4 inches) than any of the specimens I have before me, but in shape generally takes after those generally designated *utilis*. What it will turn out to be I cannot pretend to foretell. What its name is, or is to be, I cannot hazard a guess, nor have I been able to ascertain any name so far that it goes by.

Betula fontinalis, or *Western Black Birch*.—*Fontinalis* is a name and word that falls pleasantly on our ears. It presents us with prospects and visions of grace and beauty. A name, too, with such associations deserves, if it cannot obtain here, a calling forth of the prettiest display of ideas, expressed in the prettiest collection of words.

At first glance, the name conveys to us the impression of having some connexion with spraying fountains or springing wells. Then we recall the classical interpretation of the word "*Fontinalis*," the name bestowed, in days of early Rome, upon the Festival of Fountains. But I am afraid the name of this Birch tree will have to be traced to a more prosaic and modern origin. The tree is a native of Western North America. It flourishes best in moist soils, and on banks of rivers.

Our experience of it in Great Britain, as far as I can learn, is up to now meagre. It was only introduced to Kew in 1897, where it

enjoys a reputation of good health and a promise of miniature shapely grace.

I have only met it in its cradle stage at Hergest Croft. The leaves of Mr. BANK's tree seem to fulfil the definition in shape, size and other features accorded to it in Mr. W. J. BEAN's book. The leaves before me run to 2 inches long, are broadly ovate and rounded at the base, and it has glandular branchlets. In short, the leaves in shape, size and appearance are as in many other Birch trees.

Its bark some day will be noticeable, we learn, to the keener observer, because it refrains from peeling. Its evidently close affinity, *B. alaskana*, from high land and a long way below-zero climate, has a lighter coloured stem, and indulges in the habit of exfoliation, and that is the difference, we are told, as between the two. Personally I have never to my knowledge come across a *B. alaskana*, nor, as far as I know, across an owner that possessed one. Some day—who knows?—a Birch tree collection will become a fashion and the last cry. Some day perhaps Birches will be planted as an overhead shade to shrub life, as in the tropics they plant the gorgeous Coral trees (*Erythrina umbrosa*) to give shade and shelter to the coco plants, and call them affectionately "madre de cacao."

But if Birch-tree planting ever does become a fashion, I believe it will turn out a far from uninteresting or unornamental cult. In those days there will be a better chance of a closer acquaintance with *B. fontinalis* and *B. alaskana*.

Betula costata, *B. grossa*, *B. ulmifolia*, *B. carpinifolia*. A very difficult quartette this, to dissociate satisfactorily and attune harmoniously. The same recurrences of form and feature between them, like the themes in contrapuntal music, seem to appear and reappear, again and again.

Without any pretence of disentangling such a Chinese puzzle as the question presents, I will only try to sift a little evidence on what I have seen and read.

We have it from WILSON, that probably the first delivery of *costata* seed, from the mixed forests of Korea, were those sent to the Arnold Arboretum in the year 1918; since when, some years later, we were warned by the discoverer on no account to confuse *costata* with *grossa*. At the same time, at the date of the publication of "Plantae Wilsonianae" (1916), a suspicious intimacy between the two was strongly hinted at.

The same cherry flavour that among others is attributed to the American *B. lenta* and *B. lutea* was assigned to both *B. grossa* and *B. costata*. In one place WILSON tells us that the only white-barked Birch that rejoices in this fragrant attribute is a tree called *B. corylifolia*. *B. costata*, however, is described as a tree with a white papery bark, turning on old trees to a grey, loose, scaly bark, while the other trees associated with the cherry flavour—*grossa*, *lenta*, *lutea*, etc.—are dark stemmed, smooth, non-peeling barked trees.

We are told that the leaf of the *B. costata* is ovate, long, pointed,

sharply toothed, and of a lustrous green hue with prominent nerves, a description, in spite of the absence of information upon measurements, that does not ill accord with our so-called *B. ulmifolia*, the leaf of which is rather more than 4 inches long, and rather less than 2 inches wide. At the same time, and by way of an *obiter dictum*, I should like to add that the leaf, to most eyes, bears more resemblance to a Hornbeam than an Elm.

Betula grossa.—In *B. grossa* we have to look for a Birch which bears a family resemblance to its American cousin *B. lenta*, a resemblance that is not, I believe, considered generally a flattering one to its Western relation. They both sport smooth, non-peeling, dark grey bark. They both dispense the much-talked-of cherry flavour.

Now this little clique of Birch trees claiming cherry fragrance—to wit, *grossa*, *costata*, *corylifolia*, and the American *lenta* and *lutea*—have no monopoly, in the tree world, of this cherry odour. The *Nothofagi* of New Zealand, although Beeches, in some instances seemingly assume Birchen names. *Nothofagus Menziesii*, for instance, nicknames itself Cherry Birch. Further enquiries perhaps might unearth further applicants for the honour of this aromatic name.

Betula carpinifolia remains the only name left of the quartette to grapple with. Are *grossa*, *ulmifolia*, *carpinifolia* to be regarded as a one-stringed lute or a three-stringed double-bass instrument?

Are *ulmifolia* and *carpinifolia* to be regarded as one and the same, or varieties of *B. grossa*, or are they all three going to be permitted to set up independent and separate standards? The colour of the bark seems the same, on young trees ashy grey. The non-peeling bark and aromatic taste and odour of all three are reckoned as similar. It certainly seems possible that what is called *ulmifolia* in some places is called *carpinifolia* in others.

In days when London spoke forth in her "ex-cathedra" utterance, *B. lenta* had an alias *B. carpinifolia*, and we also read of a *B. urticifolia*, an ominous reminder of the relationship between Elm and Nettle. Readers may exclaim, "What's in a name!" The answer to that is the everlasting requirement of one, and not more than one, distinguishing name, so that a tree, or anything, may be known and spoken of, conversationally, in a common language, understood by the people at large.

The tree, whatever its ultimate name, seems full of promise, and of shapely habit. Had it a tongue to speak, in great probability it would resent my patronizing tone of description.

As regards the questions of affinity, dissociation, and final nomenclature of the above-named *grossa*, *costata*, *ulmifolia*, *carpinifolia*, *lenta* var. *grossa*, we must await further instruction. And now I have left out one with a common synonym, *Ermanii*, which not only rejoices in the all-embracing, come-to-my-arms invitation that *B. Bhojpatra* offers so promiscuously, but also has recorded against its name the *ulmifolia* alias, just to show, I suppose, there is no ill feeling.

It seems that some such personality is badly needed as he who in the Book of the Wisdom of Solomon had been "given a certain knowledge of the diversities of plants."

So far our wise men on the subject of these newly imported Birchen trees have sounded uncertain notes.

I must not leave these troubled waters of many streams without a reference to what ELWES and HENRY have to say on the subject. After all, a quotation from their work, or any other work of note, though it may not amount to anything in the form of an original contribution, still is a veiled compliment, a tribute of deferential recognition to the authors.

The length of the leaf of the *B. ulmifolia*, according to them, is from 3 inches long to $1\frac{1}{2}$ wide, an inch in the first case and half an inch in the second less than our largest leaf measured. But leaves do and will vary in the best regulated families.

They further prophesy as a possible eventuality, that the so-called *B. grossa* and *B. carpinifolia* may some day turn out to be regarded as hybrids of *ulmifolia*, and *costata* come to be looked upon as the Continental geographical form of the same species; an account which demonstrates that further experience is required before a precise decision is arrived at.

Betula alaskana.—There are still a few remaining of the fully grown—I propose referring to the dwarf specimens separately—that so far have escaped observation in these comments; trees, too, that have obtained their certificates as recognized species, and their place in the Botanical Studbook of Plants.

There is in the first place a Birch tree from Yukon, called *B. alaskana*. This is a tree that is accorded a notice in BEAN's book, but that goes unmentioned in ELWES and HENRY. I have alluded to it elsewhere, in connexion with *B. fontinalis*. The outstanding difference between the two appears to be that while *B. alaskana* has a peeling, *B. fontinalis* affects an unpeeling bark.

As *B. fontinalis* was only introduced to Kew in 1895, and *B. alaskana* in 1905, and as it is usually, and in this case certainly, a rather far cry from Kew to countryside collections, the question of peeling or not peeling, in such short careers, can hardly have become yet a question of practical politics with them. Meanwhile all that we amateur collectors can do is to treasure up this information for a future day, and keep a sharp look-out upon the future wear and tear of their trunk attire.

Betula corylifolia.—Another mysterious plant is a Japanese Birch, that appears in ELWES and HENRY under the name of *corylifolia*. They tell us there that very little is known about it in its own country, and I think we may safely take it—since we are told that it has not been introduced into cultivation in Europe—that less about it is known here. However, I note and record that WILSON sent back from Japan in 1914 seeds under this name *B. corylifolia*, and numbered them 6847, 7651, 7502, 7024 and 7728. He alludes to an out-

standing characteristic of the tree, namely the whitish-grey colour and the silky appressed grey hairs of the under surface of its leaves.* It also claims admittance to that little coterie of Birches which signalize their presence by diffusing from their shoots and inner bark a cherry-like fragrance, and if so it is the only white-stemmed Birch that has qualified for such an admittance. Some of us some day, recipients of gifts of seeds, may wake up and find that we have entertained angels unawares, and are the possessors of one of these evidently curious species. Whether this tree, written on by WILSON, is identical with the one spoken of by ELWES and HENRY, no one seems to have vouched information. They both come from Japan.

THE DWARF BIRCHES.

“Where the hillside slopes from the covert to the peatstained stream
below,
Small and of no reputation, the children of Nature grow :
On broken banks—and ridges—and the fringe of the bog beneath—
And out on the open spaces of the wide, eternal heath.”

E. M. HILLS.

The Birches, like many other trees, and, for the matter of that, like many another order of creation—man, beast, and plant—have their prostrate, and procumbent, their creeping, and crawling, representatives.

All specimens of the Animal and Vegetable Kingdom, as they approach high altitudes and more frigid zones, seem to lose in stature and size.

The mountain pony and the mountain sheep, on the high hill tops, become the diminutive representatives of their respectively equine and ovine families.

Shade and deprivation of sun rays seem to exercise a similar depressing effect. The more sunkissed Hottentot, living on the outskirts of the forest, is a larger specimen of humanity than his neighbour of the pigmy and bushmen tribes, who live year in, year out, under the dense leaf canopies of African jungle forests. All three—man, beast, and plant—seem to be the victims of environment. The gradation in size is the same with them all, both latitudinally and altitudinally.

The same story holds good in the story of Birch trees. Three of their procumbent species are candidates—in company with a few Whortleberry-looking Willows—for *proxime accessit* honours, accorded to Polar explorers.

We are told—I have not been to see—that *Betula nana*, representing Europe, has reached Lapland, also that its affinity, representing America and called *Betula glandulosa*, has penetrated the

* These leaves are further described by WILSON as broad, ovate to obovate, coarsely toothed with prominent veins. In short, except for their coarser toothings, not unlike our British Birch.

chilly territories of Hudson Bay, and made advances upon the fastnesses of Greenland's icy mountains.

B. nana, in company with a few baby grown willows of *reductio ad absurdum* form, belonging to the graceful and respectably elsewhere grown *Salix alba*, is about the only form of tree life that apparently contrives existence in the Lapland-Russia tundras. These almost treeless tracts are for the most part mossy, moist, lifeless flats, a terrestrial state of things caused by a soil wet and frozen during the greater part of the year, and affected generally by low temperatures and continuous high winds. For the *breve gaudium* of a green life meted out to them, they are indebted to the boon of continuous daylight during the greater part of their 2½ months summer season.

It almost raises a smile of rather offensive superiority when we read that these little Birch trees are solemnly and annually mown down to provide what is termed a "tree hay" fodder for the evidently very few representatives of the animal kingdom that survive in regions so far removed from our ideas of the margin of cultivation.

Hardly, too, our idea of a Smithfield Show fare, but surely not ours to outpour scorn upon their humbler Harvest Homes, after such successions of sodden summers as we have experienced of late.

I read of another—again without a personal visit to verify—a complete stranger to our lands, which has assumed, rather prematurely I am inclined to think, the somewhat grandiose title of *antarctica*. Its efforts, as its name implies, have been in the direction of South Pole conquest, but so far, I hear, it has stopped short in its journeyings at Tierra del Fuego, and the lands around which MAGELLAN cruised in the early part of the sixteenth century. It was his entry at the Straits named after him that inspired COLERIDGE's picture of the Ancient Mariner. For MAGELLAN

" Was the first that ever burst,
Into that silent sea."

What must have been the feelings aroused in the mind of a poet's fantasy, that stricken Old Man of the Sea, when he sighted the familiar Birch plant on strange coast lands, so far away from home and the beloved Kirkside scenes of his early days, the poet omitted to describe.

There are still a few remaining of the shrub and scrub type of Birch, immortalized by mention made of them, on the pages of LOUDON and BEAN, namely, *B. humilis*, *B. fruticosa*, and *B. pumila*.

Let us see what the Olympians have to say about them, for they are not the sort of plants you meet in everyday walks of life.

B. humilis, the Shrubby Birch, is a native of Europe and Asiatic high altitudes.

B. fruticosa, a dweller in moist places, is a native of E. Siberia, Canada, and Germany. So LOUDON tells us. It is regarded as of very close affinity to *B. humilis*.

B. pumila, mentioned by LOUDON and BEAN, and called by the former the Hairy Dwarf Birch, and by the latter the Low Birch,

neither of them by the way of what you might call very pretty descriptives, declares its difference from the two previously mentioned by its non-warty branchlets. It appears to be devoid of merit or beauty, two fatal blots on the characteristics and appearances of anyone or anything. Like its first cousins, the Alders, it is said to revel in moist and boggy places.

This seems to exhaust the topic of the minute, and the miniature, of the lineal descendants of the Birch-tree tribe, as far as the last century is concerned. There has, however, burst upon the scene a new *débutante* called *B. Wilsonii*, introduced in 1909, and numbered 1140 by E. H. WILSON. Though it burst upon our scene here, it was but a *breve gaudium* it, and we, enjoyed. Some of the seeds given me germinated; but though this is what you might call a Birch countryside, the results were short lived. The end came quickly. It apparently has quite independent characteristics, silky, hairy and closely veined leaves, that I fain would have had the opportunity of sampling further. They sounded, too, attractive from WILSON'S description of them, in their Chinese native land, hanging over cliffs and rocky gorges, a fate and situation I had mentally intended to allot to them here; but man proposes, etc.

I think I must now try a few *nanas*, as occupants of their once reserved seats.

And so ends my rather unedifying and somewhat questioning sketch of the Birchen family, dealing with some of its members that I have met with in life, dealing with others that I live in hopes of gaining more information about and claiming a closer acquaintance with, and finally dealing with still some more that I await introduction to.

I feel I would, if I could, impress the idea that I am impressed with—namely, that they are trees not made enough of “in England's green and pleasant land.”

Why this is so, if it is so, is hard to explain. In places where they are common, and grow as thick as barley haulms in summer-time, they are too common in the sight of any other than a pea-stick searcher, to connect with any landscape mission.

In places where they are not common they seem rather to have somehow escaped the notice they deserve. As roadside avenues, compare them, for a moment, scenically, with the usual list served up by writers, often beginning and ending with the Plane tree, or filled in with heavy headed, road destroying, light obscuring, umbrageous specimens of the arboricultural world, that early in life court cropped heads, and lopped tops, by decrees that issue from the Road Authorities.

Then visualize—or go and see—our white but less white native Birch adorning the town of Cheltenham, the outskirts of Hereford city, and elsewhere—an avenue, say, of the ultra white-stemmed Canoe Birch (*B. papyrifera*), trimmed up early in life and high enough to display, at very least, one-third of cleared stem; surely a joy by day and a guiding star by night, to the pedestrian and motor travellers—

a light unto their feet, a lamp in their path. But I am breaking fresh ground I do not desire to travel over.

Sir WALTER SCOTT rendered you high homage, "most beautiful of forest trees, the Lady of the Woods." Let me humbly echo it, as a constant believer in your use and beauty. And, lest we forget, I would exhort all those who contemplate scenic effect to lay to heart and memorialize the lines of a Highland poet :

" Pine is King of Scottish Woods,
But the Queen—ah ! who is she ?
The fairest form the forest kens,
The Bonnie Birken tree."

CONTRIBUTIONS FROM THE WISLEY LABORATORY.

L.—SOME PESTS OF WATER LILIES.

By G. FOX WILSON, N.D.H., F.E.S., Entomologist.

AT times during the past few years many species of Nymphaeas in the large collection at Wisley and elsewhere have been either killed by caddis worms or their foliage and flowers rendered unsightly by aphides and the larvæ of the Water Lily beetle and the Brown China Marks moth. The extent of damage by these insects has called for a serious attempt to ascertain their life histories and to devise practical measures for their prevention and destruction. The preference shown by Nymphaeas for still waters aggravates the incidence of insect pests.

Water Lilies are attractive subjects for the garden, not only for their flowers—many varieties possess the additional advantage of perfumed blossoms—but for their glossy, marbled or tinted foliage. So wide is the range of varieties that one can now obtain plants suitable for both large stretches of water and small pools. With careful choice, it is possible to obtain an extended season of flowering from April to October.* Owing to the great vigour of certain varieties (e.g. *N. Gladstoniana* and *N. Marliacea albida*), after a few years the foliage is apt to be pushed far above the water level. This fact is important inasmuch as fish, particularly carp and dace, are unable to reach the leaves and feed on the larvæ of *Galeruca* and *Hydrocampa*. The importance of keeping fish in all waters in which Nymphaeas are grown will be dealt with later.

The following key will aid the identification of the species concerned in damaging the plants.

Symptoms of Attack.	Agents Responsible.	Susceptible Vars.
1. Growth buds eaten out ; roots bitten off.	Caddis fly larvæ.	<i>N. 'James Brydon.'</i> <i>N. gloriosa.</i> <i>N. Moorei.</i>
2. Foliage and flowers discoloured, resulting in premature decay.	Aphides.	<i>N. alba.</i> <i>N. Marliacea albida.</i> <i>N. stellata.</i>
3. Foliage riddled.	Water Lily Beetle, larvæ and adults.	<i>N. alba.</i> <i>N. Gladstoniana.</i> <i>N. M. albida.</i> <i>N. stellata.</i>
4. Foliage with clean-cut, oval-shaped holes.	Brown China Marks Moth larvæ.	<i>N. alba.</i> <i>N. stellata.</i>
5. Foliage with serpentine mines.	Midge larvæ.	<i>N. species.</i>

* HUDSON, J., *R.H.S. Jour.*, 38, Nov. 1912, pp. 249-255.

1. *Caddis Flies or Water Moths*.—Members of the Order *Trichoptera* possess aquatic larvæ which are commonly known as case or caddis worms. Both the adult and larval stages are well known to fishermen, whilst many trout flies are patterned on the adult stage (e.g. Cinnamon Sedge, etc.). The larvæ were recognized by ISAAC WALTON as useful bait for many kinds of freshwater fish.

Caddis worms (*Limnophilus flavicornis* Fab.) have been recorded as pests of watercress by Miss ORMEROD * at Guildford and in Hampshire and by THEOBALD † at Guildford.

Description.—Caddis flies are feeble flyers, with four obscurely coloured wings which are covered with hairs and sloped over the body in repose. The mandibles of the two species under consideration (*Halesus radiatus* Curt. and *Limnophilus marmoratus* Curt.) are atrophied. They were never observed to feed in the adult stage, although the mouthparts are adapted for a liquid diet. They are nocturnal insects and are attracted to light traps (THEOBALD ‡). At Wisley twenty-nine caddis flies (*Halesus* species) were taken at a light trap between 8 and 11 P.M. when placed near the large pond (August 28, 1925).

The eggs are usually green and are laid in cylindrical masses covered with a mucilaginous exudation which swells up on submergence in water. The process of oviposition by *Phryganica grandis* L. was observed several times at Wisley during the forenoon in mid-June. The female fly skimmed over the surface of the water for some minutes before depositing her egg mass at the edge of the pond at water level. *H. radiatus* dropped the egg mass into the water between the foliage of Nymphaeas.

The larva or caddis "worm" is aquatic, caterpillar-like, and lives in a tubular case constructed of various materials, e.g. sand, pebbles, gravel, small shells, sticks, leaves and stems of aquatic plants. The case is made within twenty-four hours of emergence from the egg and is open at both ends, the anterior end being the larger to allow the head and thoracic segments, on which are borne three pairs of walking legs, to protrude. The various materials which form the outer covering of the case are built up on a silken framework, whilst a silken plate protects the posterior end, but allows a free flow of water for supplying air to the tracheal gills, which are arranged in groups on the abdominal segments. The anal segment bears a pair of grappling hooks which, together with three prominences on the first abdominal segment, anchor the larva to its case. The head is strongly chitinized and bears very short antennæ, far different from the long antennæ of the adult. The pro- and meso-thoracic segments bear dorsal plates.

Life History.—The larvæ are not exclusively phytophagous, for they will feed, especially in captivity, on the larvæ of *Chironomus* and

* ORMEROD, E. A., 20th Rept. *Observations Injurious Insects*, 1897, pp. 153-157.

† THEOBALD, F. V., *Jour. S.E. Agric. College, Wye*, No. 15, July 1906, pp. 113-115.

‡ THEOBALD, F. V., *R.H.S. Jour.*, 51, 1926, p. 322.

other aquatic insects, and even take to cannibalism. As the larva grows it enlarges its case by adding to the anterior end. In captivity both the undermentioned species used pieces from the leaves and petioles of Nymphaeas for this purpose.

The species recorded as pests of cultivated Water Lilies are :

Halesus radiatus Curt. (fig. 15). The larvæ were obtained from a pool on the Rock Garden, where they were found damaging the roots and growth buds of *N.* 'James Brydon' on May 31, 1924. Adults emerged on and after September 29, 1924. The case (fig. 15) is elongated and constructed of pieces of small twigs, petioles of oak and other leaves and grass and *Equisetum* stems arranged longitudinally, with from one to four longer pieces of stem projecting beyond one end. The mature larva (fig. 15) measures $1\frac{1}{2}$ inch long. The head, thoracic and first abdominal segments are dark brown ; the pro- and meso-thoracic segments possess strongly chitinized plates placed dorsally ; the remaining segments are cream coloured.

Limnophilus marmoratus Curt. The larvæ were obtained from the lake in Mr. MAITLAND KING'S garden at Woodham, Surrey, on May 26, 1927. Adults emerged on and after July 7, 1927. The case is more compact, and is constructed of oak twigs, stems of grasses and rushes, and pine needles arranged obliquely. The mature larva measures $\frac{3}{4}$ inch long. The head and pro- and meso-thoracic segments, which also bear heavily chitinized plates dorsally, are dark brown and the remaining segments are ivory white.

The following is an extract from a letter written by Mr. MAITLAND KING (October 22, 1927) : " The following varieties of Nymphaeas were planted on or about May 12, 1927—'Escarboucle,' *Moorei*, *gloriosa* and *virginale*. When planting other varieties on May 23 it was noticed that the leaves of the four varieties previously mentioned were bitten through as fast as they grew. It was found that they were being devoured by swarms of caddis worms. The attacked plants were lifted—*Moorei* and *gloriosa* never recovered—and replanted after stocking the pond with goldfish. It was found that Arums (*Richardia* (*Calla*) *aethiopica* which were planted in the pond during the autumn of 1926 suffered in the same way as the Nymphaeas, but a fresh lot planted after the pond had been stocked with fish are flourishing."

On reaching maturity the larva shortens its case, fixes it to some submerged object, and closes both ends by means of silken plates (*Halesus*) or small stones. *Limnophilus* used pieces of acorn " cups."

The pupa is free within its case with the antennæ, legs and wings free from the body. When metamorphosis was complete, the pupæ of both species cut through the case with the mandibles and crawled up the petioles of Nymphaeas, when, after a short time, the adults emerged.

Natural Enemies.—The chief enemies of both the larval and adult stages are various kinds of fish. Trout devour the adults, larvæ and pupæ with avidity. Carp have been seen to eat the egg masses of *Phryganea grandis* L., whilst sticklebacks were observed to suck off

the eggs of an unidentified species from the leaves of *N. Gladstoniana*. Eels will devour large numbers of caddis larvæ, but their introduction into small ponds is not to be recommended by reason of the mud stirred up. Of these, carp and goldfish will prove to be the most satisfactory inhabitants of ponds and small lakes; they flourish in stagnant waters.

Amongst insect enemies there are several specialized hymenopterous parasites which attack both eggs and larvæ. McLACHLAN * states that PARFITT has reared a dipterous parasite (*Hydrotachina limniphili* Walker) from the larvæ of *L. marmoratus*. Klapálek † describes the life history of an ichneumon (*Agriotypus armatus* Walker) which is found attacking caddis larvæ (*Silo* species) in Eastern Bohemia. The larva of the larger water beetle, *Dytiscus marginalis* L., has been observed to feed on caddis larvæ, and records show that several of the larger aquatic insects will readily devour them. The larvæ of *H. radiatus* and *L. marmoratus* were found to develop cannibalistic habits under aquarium conditions.

Remedial Measures.—(i) Cleanliness—it is advisable to prevent an accumulation of decaying vegetable matter in small ponds and pools. Where it is possible, all ponds and pools should be emptied during May when replanting and a thorough examination made of the stools to see whether caddis larvæ are present. At this period, handpicking can be easily resorted to.

(ii) Fish, especially young trout and carp, should be introduced into all waters in which Nymphaeas are grown, not excepting the smaller pools often found on rock gardens and into which goldfish may be placed.

(iii) Light traps—where large areas are affected, a trap composed of a naked acetylene jet placed in the centre of a large basin partly filled with water on which a little paraffin has been poured should be placed round the edge of lakes periodically during June and July in order to trap the adults.

2. *The Water Lily or Reddish-Brown Plum Aphis, Rhopalosiphum nymphaeae* L., is frequently found attacking Nymphaeas (fig. 16) and other aquatic plants. It plays great havoc with Water Lilies, causing disfiguration of the foliage, distortion of the flower stems, and discoloration of the flowers.

BUCKTON ‡ in 1879 records this species as taken on water plantain (*Alisma plantago*) at Wanstead ponds, and says that "in some years it attacks the leaves of *N. alba* so vigorously that the plants on large sheets of water disappear for the whole year. Occasionally it is but too common at Hampton Court, but at other years the aphis is difficult to find at all."

At Wisley it occurs periodically on Nymphaeas (see key for susceptible varieties) and causes great damage to foliage and flowers. In

* McLACHLAN, R., *Trans. Ent. Soc. London*, 3rd Ser., vol. 5, 1865-1867, p. 35.

† Klapálek, F., *Entomologist's Monthly Magazine*, vol. 25, 1889, pp. 339-343.

‡ BUCKTON, G. B., *Monograph of British Aphides*, vol. ii. 1877, pp. 12-13.

some years (1922 and 1926) the infestation was severe, whilst in others (1925 and 1927) the attack was negligible.

Food Plants.—BUCKTON * records this species as occurring on water plantain, flowering Rush (*Butomus umbellatus*), pondweed (*Potamogeton natans*), frog-bit (*Hydrocharis Morsus-ranae*) and duckweed (*Lemna gibba*). DAVIDSON † gives a list of twelve host plants, including the white and yellow indigenous species of Water Lily, *N. alba* and *Nuphar lutea*. THEOBALD ‡ mentions twenty-one host plants in Europe and North Africa, with an additional nine in North America.

The Water Lily aphid was found in large numbers on plants of *N. lutea* in June 1926 growing in a watercourse in a meadow about one mile away from Wisley in a northerly direction.

Life History.—Miss PATCH § worked out the life history, and found that this aphid, like most members of the family *Aphididae*, has two alternate hosts. The autumn, winter and spring months are spent on the plum, where it lives on the shoots and ventral surfaces of the leaves and, occasionally, on the young fruit. Usually the leaf is not deformed, and consequently its presence is overlooked. Spring migrants from plum pass to water plantain, arrowhead (*Sagittaria sagittifolia*) and bulrush (*Typha latifolia*). In autumn the aphides return to the plum for the deposition of over-wintering eggs. We have not found this species on plums at Wisley.

Description.—The injurious form on Nymphæas is the apterous, viviparous female (fig. 16), which is oval-shaped and dark olive-green in colour. The head is broad and dark grey and the eyes dark brown. The antennæ are stout and dark grey. The abdomen is keeled and is lighter green at the sides. The winged viviparous female is a smoky green colour, with the head and thorax very dark.

At Wisley the first migrants appear on cultivated Nymphæas during the first and second weeks in June.

Natural Enemies.—Many birds, especially wrens, have been observed to feed on the aphides clustered on the leaves and flower stems. HUDSON || noticed that moor-fowl feed on them.

If infested plants are examined critically in July and August, one finds that a large percentage of the aphides are parasitized by Braconids (species at present undetermined). They may be recognized by their bloated appearance, stiffened chitinated segments and light brown colour.

BUCKTON, ¶ quoting WALKER, states that Nymphæas are saved from destruction by aphides through the agency of *Allotria erythrocephala*. The genus *Allotria*, now *Charips* (Order Cynipidae), however, is hyperparasitical through *Aphidius* (Order Braconidae), and it is the Braconid rather than the Cynipid which is to be encouraged.

Later (p. 157), BUCKTON suggests that leaves of water plantain bearing parasitized aphides might be introduced into gardens and

* BUCKTON, *loc. cit.*

† DAVIDSON, J., *A List of British Aphides*, 1925, p. 56.

‡ THEOBALD, *Bull. Ent. Research*, vol. vi. 1915, p. 118.

§ PATCH, E. M., *Science*, Philadelphia, vol. 42, No. 1074, July 1915, p. 164.

|| HUDSON, *loc. cit.*

¶ BUCKTON, *loc. cit.*, p. 153.

greenhouses with marked beneficial effects. He places the percentage of parasitized *R. nymphæae* on water plantain as high as ninety.

Remedial Measures.—To avoid disappointment in the form of decayed foliage and distorted and discoloured flowers, it is essential that remedial measures be taken against this pest as soon as its presence is observed.

Spraying.—The foliage should be sprayed thoroughly with quassia extract (*vide* HUDSON) or nicotine-soap wash applied through a "Mistry Junior" ("Acme" or "Marvellous") nozzle, which gives a wide-angled cone and a mist-like spray. To ensure success, the pressure must be high (i.e. over 100 lb. to the square inch) in order to "wet" the insects. Any contact wash containing Derris root should be rigorously avoided, as Derris, even after preparation as an ingredient in certain proprietary washes, is toxic to fish.

Vigorous growers (e.g. *N. Gladstoniana*) are inclined to push their foliage far above the water-level, resulting in the overlapping of the "pads," which is a decided hindrance to efficient spraying. This trouble may be largely overcome by early spraying, when the aim is to destroy the spring migrants.

Heavy rain, especially thunder showers, is a great cleanser of heavily infested plants.

3. *Water Lily Beetle, Galeruca nymphæae* L. (*Chrysomelidae*).—It is generally recognized that of all the pests to which the *Nymphaea* is heir the most destructive is this beetle.

A closely allied species, *G. sagittariae* Gyll., is often found feeding on the foliage of the wild white and yellow Water Lilies in watercourses situated in neighbouring meadows, but has not been implicated so far as a pest of cultivated plants.

At Wisley severe infestations have occurred on certain species (see key) during the past three seasons, in the months of June, July and August, on hardy plants, whilst the damage has extended into late October on tender plants grown in heated tanks in the open. The flowers of many varieties were avoided, but the white blossoms of *N. Marliacea albida* proved to be a constant source of attraction to the beetles and their larvæ.

An early account of this species was given by DE GEER * in 1775. WEISS and WEST † record it as a pest of the yellow water lily (*N. advena*) in New Jersey. It has an extended distribution in the United States and is found abundantly throughout Northern Europe and Siberia.

Description.—The beetle (fig. 15) is fuscous black or dark brown in colour, with the exception of the fore part of the head, most of the thorax, the legs and the elytra, which are rufo-testaceous. It is oblong in shape (6–8 mm. long and 3–3.5 mm. wide). The head is large and the eyes are prominent. The apical segments of the antennæ are black and the basal reddish. The elytra are sub-parallel, thickly

* DE GEER, *Memoires pour servir à l'histoire des Insects*, vol. v. pp. 326–329, plate 10, figs. 1–6.

† WEISS, H. B., and WEST, E., *Canadian Entomologist, Ont.*, vol. 52, No. 8, Oct. 1920, pp. 237–239.

punctured with distinct raised lines and clothed with a fine greyish pubescence. The ventral surface is clothed with a white silky pubescence.

The eggs (fig. 15) are brownish-yellow in colour (0.9 mm. long and 0.5 mm. wide), shiny, smooth, finely and closely sculptured.

The larva (fig. 15) is entirely black or very dark brown above and yellow beneath, with a black head and three pairs of black legs borne on the thoracic segments and a well-developed anal "foot." When mature it measures 7.8.2 mm. long and 2.2.5 mm. wide.

The pupa (fig. 15) at first is entirely black, except the ventral surface of the thorax and abdomen, on which yellow intersegmental areas are seen. The legs, wings, and antennæ are clearly seen and are free from the surface of the body. The mature pupa measures 5.6.5 mm. long and 2.5.3.2 mm. wide.

Life History.—Numerous beetles have been found hibernating in the dead stems of *Spiraea Aruncus* and other waterside plants during November and December. Beetles appear on the leaves of *Nymphaeas* during the second week in June and are found until September, although a few are still to be seen (1927) on the plants in mid-October. The eggs are deposited on the upper surface of the leaves in clusters of sixteen to twenty-one. They hatch in from five to seven days, when the young larvæ emerge from the apical point of the eggs. Eggs which were submerged in water for over a week failed to hatch. The larvæ are at first partly gregarious, and one finds from four to six larvæ clustered together, often in a star-shaped formation. They feed on the parenchymatous tissue of the foliage and flowers, with the result that irregular (at first partly, later entirely) denuded areas are formed, the damage resembling that made by weevils of the genus *Otiorrhynchus* (fig. 17). As the larvæ mature they separate, and may be found on both surfaces of those leaves which are pushed above the water. Pupation takes place on both surfaces of the leaves and occupies from seven to ten days.

It was found at Wisley that there are two generations a year on the hardy varieties and three generations on *N. stellata* grown in a heated tank (larvæ and pupæ found on October 13, 1927).

Towards the end of June, and again in mid-August, it is possible to find all stages of the life history on the plants.

In the largest pond at Wisley it was found that the worst attack took place on plants growing in the northern and eastern areas. A possible explanation is that the prevailing wind, which is south-west, blows the adults towards these areas.

Natural Enemies.—Fish are voracious feeders on all stages of this beetle. Dace, carp and 3-spined sticklebacks were often seen to feed on the eggs, larvæ and pupæ. These fish would often mount on to the foliage in their endeavours to get at the pest. An exceptionally heavy rain, accompanied by sleet, which fell on June 26, 1927, dislodged numerous adults and larvæ, which were quickly disposed of by fish.

Moorhens would occasionally condescend to feed on the adults and larvæ (July 12, 1927), but their presence is not to be encouraged for this purpose as they do a great amount of damage to the foliage by their claws, which scratch the surface, thus setting up premature decay.

Remedial Measures.—(i) *Syringing* the plants forcibly with clear water dislodges the adults and larvæ and enables fish to devour them.

(ii) *Spraying* with lead arsenate or nicotine-soap wash should be carried out in severe infestations. The arsenical wash should be applied in a mist-like spray so as to avoid drenching the plants, and a deposit of lead arsenate will then remain on the foliage.

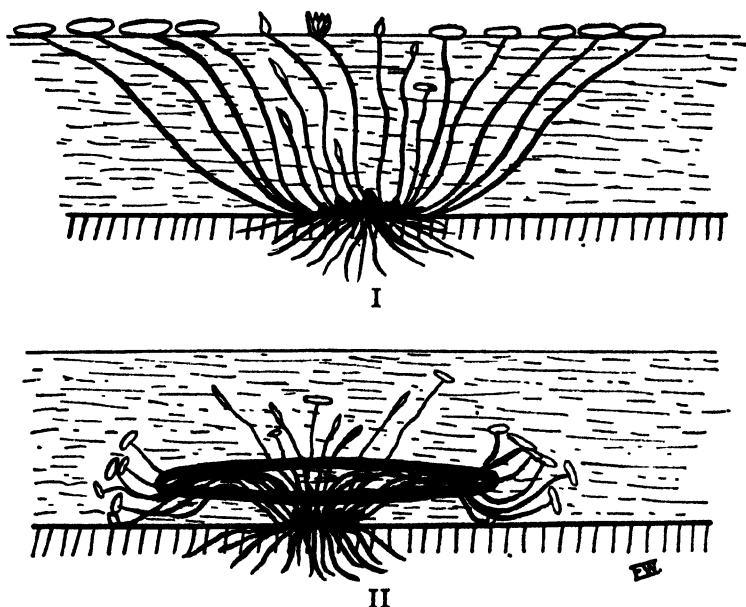


FIG. 14.—WATER LILY (I) BEFORE AND (II) AFTER SUBMERGENCE BY MEANS OF AN IRON HOOP.

(iii) *Flooding*, accompanied by a light spraying with oil, is advised by CHITTENDEN.* This method was found to destroy the floating insects. The same author found that plants which were covered by the tide each day were free from the pest. A more satisfactory method of ridding the plants was found at Wisley, where flooding could not be carried out, and that was by forcibly submerging them by means of iron hoops (fig. 14) or iron hurdles. The latter were less satisfactory, as they caused the "pads" to overlap and prevented fish from having free access to them. Plants submerged on June 18 and 25, 1927, and allowed to rise after seven days, showed that nearly all stages had been cleared off the leaves by fish. Larvæ submerged for a week under laboratory conditions were unharmed.

* CHITTENDEN, F. H., *U.S. Dept. Agr. Bur. Ent., Bull.* 54, 1905, p. 58.

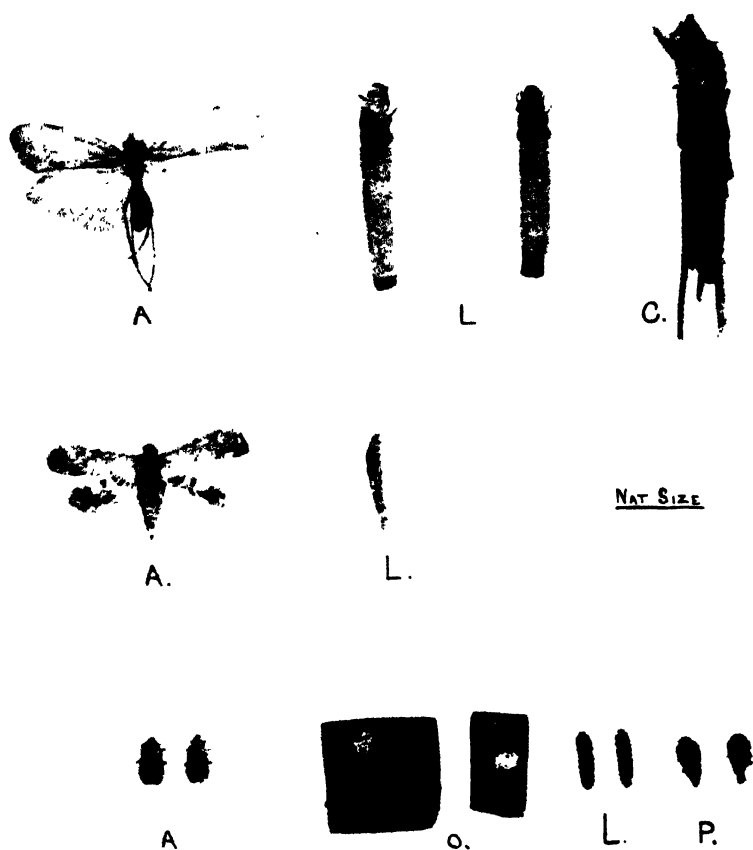


FIG. 15 - TOP LINE. CADDIS FLY (*Halesus radiatus* Curt).
 A, adult ; L, larvæ or Caddis worms ; C, larval cases.
 MIDDLE LINE. BROWN CHINA MARKS MOTH (*Hydrocampta nymphacuta* L.).
 A, moth ; L, larvæ.
 BOTTOM LINE. WATER LILY BEETLE (*Galea rufyniphacae* L.).
 A, adults ; O, eggs ; L, larvæ ; P, pupæ.

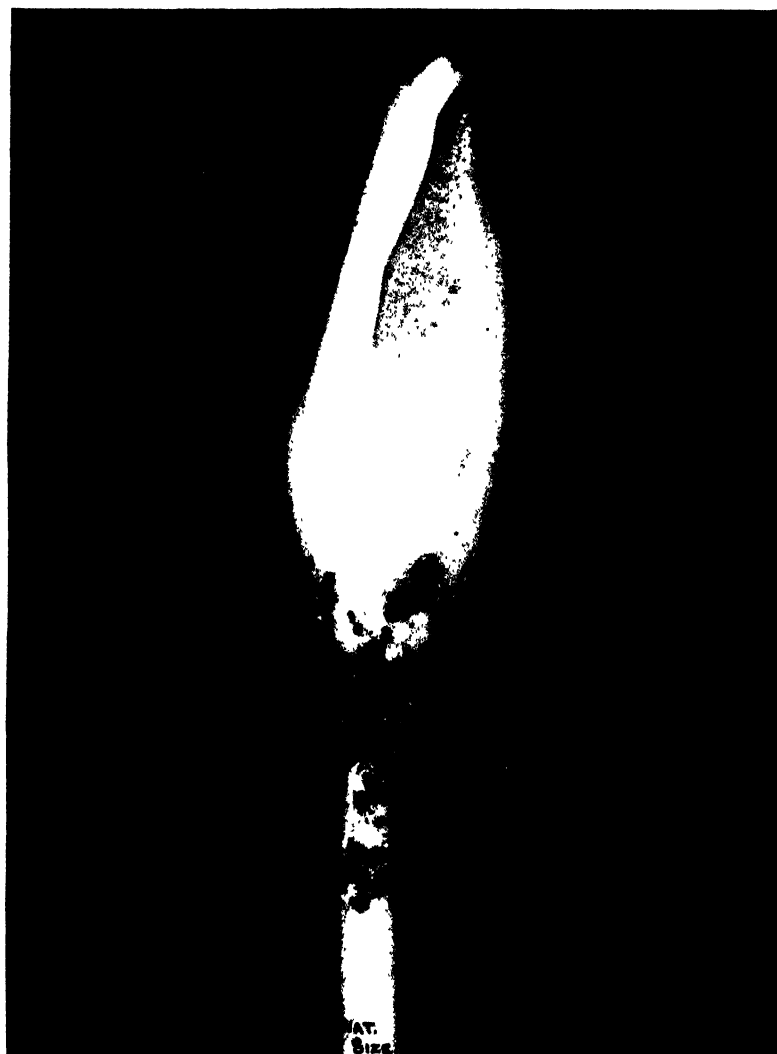


FIG. 16 - FLOWER BUD OF NYMPHAEA STELLATA ATTACKED BY APHIS
(*Rhopalosiphum nymphaeae* L.).



FIG. 17 --LEAF OF *NYMPHAEA STELLATA* ATTACKED BY WATER LILY BEETLE
(*Galeruca nymphaeae* L.)

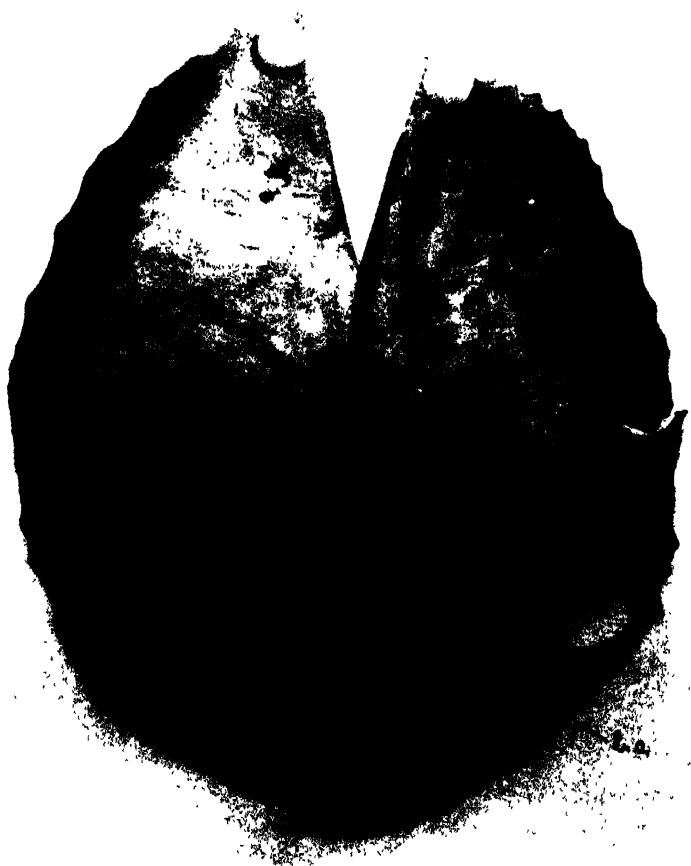


FIG. 18.—LEAF OF NYMPHAEA STELLATA ATTACKED BY LARVÆ OF THE
BROWN CHINA MARKS MOTH (*Hydrocampa nymphacata* L.).
l.c., larval cases.

[To face p. 89.]

(iv) *Cleanliness*.—All dead vegetation surrounding ponds and lakes should be cleared during November and burnt, as by this operation many hibernating beetles are killed.

Donacia Beetles.—Before leaving the subject of coleopterous pests of Nymphaeas, mention must be made of certain metallic beetles, *Donacia* species, which are frequently found on the leaves of aquatic and waterside plants. There are nineteen indigenous species, the one that is met with on Nymphaeas being *D. crassipes* F. Its colour is metallic green or violet, with the elytra greenish at the margins. The life history is exceptional in that the larvæ feed on the stems and roots of aquatic plants and obtain air for respiration from the air reservoirs within the plant. This species has not been implicated as a pest of cultivated Water Lilies, although adults have been found feeding on the upper surface of the leaves of the white Water Lily, *N. alba*.

4. *The Brown China Marks Moth, Hydrocampa nymphaeata* L. (*Pyraustidae*).—This moth receives its common name from the pattern on its wings. Together with several allied genera, the larvæ are aquatic. The larva of *H. nymphaeata* is polyphagous, its principal host plants being *N. alba*, *Potamogeton natans*, *Hydrocharis Morsus-ranae* and *Alisma Plantago*. It is frequently found on *P. natans* in the Basingstoke Canal between Byfleet and Woking, whilst it chooses *N. stellata* as its host plant amongst the various species growing at Wisley.

Description.—The adult is a delicately formed moth (fig. 15) with a wing expanse of 1-1½ inch. The fore-wings vary in colour from brown to orange-yellow and are freely studded with irregular white patches. The lower margin of the hind-wings is white, studded with brown, whilst darker brown bands, parallel to the distal edge, cross from margin to margin.

The eggs are yellowish-brown, somewhat oval, flattened at both ends and covered with a gelatinous exudation from the female.

The larva (fig. 15) is cream-coloured, with a darker dorsal line. The middle part of the body is the thickest and it tapers towards both ends. The head is small and light brown; the pro-thoracic plate is the same colour as the head and is shiny and dark margined. The skin is soft and studded with minute protuberances. The thoracic legs are well developed, whilst the five pairs of prolegs are mere fleshy swellings. Air is taken in through the spiracles in the same way as in terrestrial larvæ. When mature it measures from ¾-1 inch long.

The pupa is enclosed in a silken cocoon within the larval case and is situated on the stems or leaves of aquatic plants.

Life History.—The moths are on the wing during June, July, and August. They are nocturnal flyers, hiding away during the daytime in herbage surrounding ponds and lakes. Female moths were occasionally seen at dusk skimming along on the water film prior to egg laying.

The eggs are laid in small clusters on the edge or beneath the leaves of its host plant. The larva on emergence partly mines the leaf, but quickly makes for itself a flat, oval, lens-shaped case (fig. 18), formed by placing two pieces of leaf together with their under-surfaces innermost

and fastened together at the sides with silk. The upper part of the case slightly overlaps the lower. Both ends of the case are open and elastic, which prevents ingress of water. The case, even when submerged, is always found to be full of air. In the act of feeding and walking the head and thoracic segments are pushed through the anterior end of the case. As the larva grows it is employed continually in forming new cases, the mature larval case measuring $1\frac{1}{2}$ inch long and $\frac{3}{4}$ inch wide. The leaves are quickly reduced to a ragged, rotting mass. Larvæ are to be found on cultivated Nymphaeas from the beginning of July to the end of August. The later emerging larvæ, which are not fully fed by the time the leaves die down, seek out hibernating quarters along the edge of the pond and remain inactive until the following spring, when feeding is recommenced. When mature the larvæ crawl up the stems of an aquatic plant or remain on the leaves, on which they pupate within the leafy cases and there form silken cocoons. The pupal stage takes from sixteen to twenty days. The life history has been given in detail by BUCKLER.*

This moth has been recorded by SUPINO † as a serious pest to rice near Milan. The larvæ not only construct cases of the leaves but feed on the rice plants.

Remedial Measures.—(i) *Spraying* is an unsatisfactory operation against this pest because of its method of feeding and the water-tight compartment in which the larva lives.

(ii) *Flooding* or forcible submergence of the plants is the only satisfactory means of combating the pest, as by this method fish have access to the larvæ, on which they feed with avidity. It was found that when carp were introduced into rice fields they destroyed large numbers of the larvæ (SUPINO).

5. *False Leaf-Mining Midge, Cricotopus ornatus* Meig. (*longipalpis* Keiff.).—This species was recorded in 1926 ‡ from the Isle of Wight, where it was found that the larvæ were committing serious damage early in the year to Nymphaeas growing in a tank in a private garden. The effect of their presence was that the new leaves as they appeared exhibited signs of distress, rapidly turned brown, and in a short time were reduced to putrefaction.

Life History.—The eggs are laid on the surface of the water and give rise to active, apodal larvæ with glossy, transparent bodies which, at maturity, measure $\frac{1}{4}$ inch long. The larvæ "chewed" the leaves and caused great havoc. Three females and one male were bred out from the original material.

PETTIT § gives a more detailed account of another species, *Cricotopus (sylvestris)*?, and figures the damage to Nymphaea leaves.

* BUCKLER, W., *Entomologist's Monthly Magazine*, vol. 12, 1875-1876, pp. 210-213; vol. 17, 1881, pp. 249-254; *The Larvæ of British Butterflies and Moths*, 1901, vol. 9, pp. 85-101.

† SUPINO, F., *Rediconti R. Inst. Lombardo Sciensi e Lettere*, Milan, vol. 49, Nos. 2-3, 1916, pp. 108-114.

‡ A. H. H., *Gardening Illustrated*, July 31, 1926, p. 461.

§ PETTIT, R. H., 1st Rept. *Michigan Acad. Science*, 1900, pp. 110-111.

Description.—The larva and pupa are light apple-green in colour and studded with wine-coloured spots or patches of irregular form, indefinite in position in different specimens.

The pupa is partially active and lies in a tube formed of leaf tissue with its head towards the anterior opening of the tube.

The adult is of a uniform light apple-green colour.

Life History.—The larva builds up tubes of fresh green material and makes them fast in a furrow or minute ditch cut in the upper surface of the leaf. As it feeds it tunnels or ploughs a furrow which extends from the top of the leaf to the lower epidermis. The trenches are often several inches long and wind in all directions, forming serpentine mines. At the end of the tunnel in which the larva is feeding is a tube made of fresh green parenchymatous tissue, which is chewed up and bound together with silk. In order to feed, the insect extends its head from the anterior portion of the tube. The tube is made fast within the furrow and is not drawn along like a true case.

It was double brooded ; the first brood appeared on May 15, 1897, and the second on August 1, 1897.

Remedial Measures.—Spraying foliage with a nicotine wash is advised for plants growing in small tanks.*

6. *Other Animal Pests.*—Mention must be made of certain of the higher animals which prove troublesome to growers of Water Lilies.

The *Water Vole*, or water "rat," is a decided nuisance in many lakes, as it cuts off the flower heads and eats out the centre of the open blossoms. The vole makes a habit of dragging the dismembered organ to the side of the pond before disposing of it. Trapping and shooting must be resorted to in situations where the damage is severe.

Water Fowl.—HUDSON † places the blame for injury to the heart of the plant, which is sometimes pecked out, to all the duck family, including swans. He also found that moorfowl selected materials for their nests from the leaves of the newer kinds of *Nymphaeas*, especially the bronze-leaved varieties. We have found that many leaves are quickly reduced to ragged remnants through the action of disturbed moorhens scampering across the plants. On large stretches of water where *Nymphaeas* are grown as a special feature it may be necessary to scare these birds away or trap them by means of spring-traps placed beneath the surface.

I wish to express sincere thanks to Mr. G. H. MAITLAND KING (Woodham) for sending me his observations on caddis damage ; to Messrs. F. LAING, M.A. (British Museum), and H. BRITTEN (Manchester University) for identifying Trichopterous material collected at Wisley and elsewhere ; and to Messrs. F. C. BROWN and N. K. GOULD for the photographs illustrating this paper.

* A. H. H., *loc. cit.*

† HUDSON, *loc. cit.*

TALL BEARDED IRISES.

By G. L. PILKINGTON.

[Read June 8, 1927; Mr. G. P. BAKER in the Chair.]

I HAVE chosen the Tall Bearded Irises on which to talk to you this afternoon, for three reasons : firstly, because they flower in May and June, and are therefore fresh in your minds ; secondly, they are the largest and most popular group of Irises, and certainly the most beautiful ; thirdly, they are the only Irises of which I know anything and of which I feel qualified to speak.

I shall endeavour, in the course of my Lecture, to say something about the cultivation of these Irises, and also to give you a little past history, which may perhaps be of interest to you, and help you to understand how the majority of the present garden varieties have arisen ; and in so doing to mention by name some of the varieties most worth while for ordinary garden cultivation. But before going any farther, and to make sure that what is meant by a " bearded " Iris is appreciated, it should be explained that Irises are divided into two main groups, viz. bearded and beardless, i.e. Pogon and Apogon Irises. The following examples may serve to make the differences between these two groups plain.

Iris bracteata from California is a beardless Iris. It is variable in colour from biscuit to deep chrome-yellow with rich brown veining and occasionally produces an almost pink form. In common with all the Californian species it resents disturbance when the plant has reached maturity. It is best to obtain young plants in pots, or seed. A remarkable series of hybrids between the Californian and other species was shown by Mr. PERRY at Chelsea Show, 1926.

Iris Danfordiae represents a very distinct group, for whereas *I. bracteata* belongs to the rhizomatous section, *Danfordiae* is a bulb of the " reticulata " class. It flowers so early in the year that it is likely to be ruined by weather conditions, and is worth the protection of a cold frame, or at least a sheet of glass over it in the rock garden.

I. gracilipes is of the tiniest and most beautiful of all rhizomatous Irises. This exquisite flower is not much larger than one of those golden sovereigns we were once familiar with and, like the sovereign, it is worth more than its weight in gold.

None of those I have mentioned so far belongs to the bearded section, but before passing on to what Mr. DYKES called " Garden Bearded Irises " I may refer to those truly bearded but which are outside the class I am discussing to-day ; viz. the *Oncocyclus* section, of which the most familiar type is *I. Susiana*.

With these types in mind, you will now be able to appreciate the differences displayed by a few typical garden Irises of the bearded section, the varieties of which I propose to say nothing at present, but am merely introducing these names here as good examples of the tall June-flowering bearded section: 'Flavescens,' 'Daphne,' 'Morwell,' 'Drake,' and 'Asia.'

The main cultured difference between the two groups is that the Pogon (bearded) Irises like lime and dislike moisture, whereas the Apogon mostly dislike lime intensely and like moisture at the roots.

With few exceptions the tall bearded Iris is an easy plant to grow.

It has three main needs for its success: (1) sunshine, (2) good drainage, (3) lime. The class of soil which it finds itself in is within our control, but a moderately light loam is probably the best. I think that the sturdiest spikes of bloom and the strongest plants undoubtedly are produced on heavy soil, but heavy soil has its drawbacks, especially in slugs and retention of moisture; we cannot look for perfect conditions in every respect. The fact remains that the plant (or rhizome) is one of the most difficult things to kill by sheer bad treatment or complete neglect, so we can take it that this is a pretty sure indication of its hardiness: the results will therefore largely depend upon our treatment.

Tall bearded Irises spring from a rhizome, or fleshy root-stock, whose habit is to creep along the ground, and for this reason they should never be deeply planted. The rhizome is best just buried when planting, as this ensures a firmer hold for the plant until new roots begin to push out, and the rhizome will certainly push up again during the following year on to the surface. The roots should be carefully spread out, and rammed tight and not just pushed in anyhow. You cannot plant too firmly provided the soil is in good trim for planting and not too wet.

These Irises will stand moving at any time from June to end of October with perfect safety, but if there is a "best" time, and I believe there is, it is in early autumn, viz. second week of August to end of September. Personally I find that plants put in at this time stand the winter better in many cases than earlier planted ones (say July), though in the latter case the flower spikes are of better quality in the following year. It is a generally accepted idea that most bearded Irises form their embryo flower-buds for the next year in July, and, if so, it is not desirable to give them a big move or general splitting up in that month. A move from one part of the garden to another, occupying in all say half an hour, could not do much harm.

Then as to the division of the plants. The rhizomes throw out lateral fingers, which in their turn the following year throw out a further set of fingers, and the bearded Iris being a shallow-rooted plant soon exhausts the soil in its immediate vicinity, and should be

lifted and the fingers broken off and the healthiest and best retained and replanted, at least once in three years.

If you are fortunate enough to be able to devote a part of your garden to tall bearded Irises alone, then I would recommend you to choose if possible a south-westerly slope, or if no slope is available let the garden face south-west and raise all your beds, whatever the nature of the soil. If the soil is heavy and retentive, this will be essential.

The paths between your beds should be of grass, and it is absolutely necessary that you have a background of shrubs or something green to show off your blooms to the best advantage.

Beds should not exceed $4\frac{1}{2}$ feet in width; wider beds than these are unworkable.

If you are having a large border, then the width is immaterial and should be in proportion to the length, but again the question of background must not be overlooked.

All tall bearded Irises are fond of lime and should not be without it. Old mortar rubble is good, or finely ground Buxton or other unburnt limestone is excellent and has the advantage that it cannot be given in excess.

If none of these be obtainable, then apply ordinary garden lime. A dusting in March of superphosphate of lime is beneficial. The acid reaction is supposed to be capable of destroying the bacillus of the Iris rhizome root, which is a most vexatious disease in certain seasons, and is generally at its worst just after flowering commences. It is marked by the sudden wilting of flower spikes or anæmic appearance of foliage, on examination at the base of which it will be found that the rhizome itself has become a decomposed and badly smelling mass. There is no real cure. Attempts at salvage work can be carried out with varied success, and some offsets may be rescued in an apparently healthy state from the old affected rhizome, in which case they should be scraped clean of any diseased tissue which may be adhering from the old rhizome (an old teaspoon is a good tool for this purpose), dusted in a handful of superphosphate of lime, and, if the weather is at all settled and fine, left out exposed to the sun for four or five weeks on top of the soil. The old decayed rhizome should be burnt, and the plant, if possible, lifted and dusted with superphosphate of lime, and moved to a fresh site.

In spite of all this trouble, it is exceedingly doubtful if a permanent cure is effected, as I have known such rescued offshoots to break out with the disease a year, and even two years, afterwards, and am inclined to think that once infected they are always infected, or at any rate are prone to the disease. I can recall many examples in my own garden to bear out this statement.

The only other disease to attack the tall bearded Iris is "leaf-spot," which, appearing in the autumn, causes the foliage to die off prematurely, and thus greatly weakens the plants. Where plenty of lime is present in the soil this is not likely to give any trouble.

Let it be remembered then that the prime factors in cultivation are :

- (1) Sunshine.
- (2) Drainage.
- (3) Lime.

The bearded Irises depend for the following year's bloom on the baking and thorough ripening of the rhizome. It is useless to plant them on the edges of ponds or in shrubberies or densely packed herbaceous borders, as the moisture in the former position and the surrounding foliage in the latter will nullify any chances of the plants continuously producing a display of bloom, by excluding the sun's rays and their ripening effect.

Let us now look at some of the bearded Irises which we know well, and from some of them endeavour to trace forward the introduction of many of our present garden forms.

The common 'Blue Flag,' the Iris known to everybody, erroneously called 'Germanica,' of which there are many forms in cultivation, may be taken first. Mr. DYKES, than whom no greater authority on Irises has ever lived, tells us that 'Germanica' is found wild nowhere in the world, certainly not in Germany, though forms, of which *I. Kochii* is the nearest approach to a wild form, somewhat near to it are known and clearly defined. It is probably of hybrid origin, with *I. aphylla* as one of its parents, though the habit of retaining its leaves throughout the winter is directly opposite to *I. aphylla*, which is entirely deciduous, so that this trait must be inherited from its other parent.

'Germanica' has a common albino form which is to be found in most gardens and is known as *I. florentina*. The flowers are white with bluish tinge and occasionally show even splashes of blue, and the flower stems are of the slender branching form of *I. germanica*. This Iris is grown near Florence together with forms of *I. pallida* for the production of Orris Root.

I. florentina must not be confused with *I. albicans*, which is a different plant with flowers of milky whiteness and more solid form. A blue form of this Iris, named 'Madonna,' is also in commerce, but it is not worth growing. The leaves of both plants persist through the winter and the tips are invariably browned by frost.

Bearded Irises are native to Central and Southern Europe and Asia Minor, extending from the Alps eastward through Italy, Hungary, the Balkans, Asia Minor, Palestine and Mesopotamia. The first of these which I shall consider is

I. pallida, which is found in the Southern Tyrol and of which there are many wild forms. The characteristics of *I. pallida* are the tall, stout stems with very short lateral branches, the wholly scarious spathe-valves and short perianth tube. The flowers also are generally more or less of one shade of colour and are, moreover, strongly scented. The foliage of *I. pallida* is also generally broad and glaucous, though this colour of foliage varies considerably.

Closely allied to *I. pallida* we have *I. Cengialti*, to which it is connected by a number of forms. The main difference between *pallida* and *Cengialti*, as generally known, lies in the more slender and dwarfer growth of *Cengialti*, its less glaucous foliage, and its pale brown, instead of silvery, spathe-valves. Mr. DYKES further tells us that he never found any traces of so-called *I. pallida dalmatica* after a month's tramping on the coast of Dalmatia, and that we must therefore conclude that this very fine form (sometimes called 'Princess Beatrice') is also of hybrid origin (probably a garden hybrid).

As regards what we call *I. plicata*, this is probably nothing more nor less than an albino *pallida*, in which a little of the original colouring appears in delicate veining round the edges of the standards and falls. In every other respect it is a typical *pallida*.

Next consider *I. variegata*, an inhabitant of South-eastern Europe whose characteristics are its narrow and conspicuously ribbed foliage, its green, or green flushed with purple, spathe-valves, its occasional purple coloration at the base of the leaves, and its more or less branching stem. This is a hardy Iris, for its leaves die entirely away in autumn. An excellent example of the *variegata* section is the hybrid 'Marsh Marigold.'

It is from this source that we have obtained the yellow tones in the majority of our garden Irises, *I. variegata* itself having yellow standards and falls veined with chestnut or purple in varying degrees. The so-called sections Sambucina, Neglecta, Amoena, and Squalens also probably arose from hybrids between these two species.

In the first half of the nineteenth century we find that the only bearded Irises in commerce were *I. aphylla*, forms of *I. pallida* and *I. variegata*, and hybrids between the two species, and it was from these that JACQUES (1780-1866) and LEMON (1836-1895) on the Continent, and ROBERT PARKER (Tooting), JOHN SALTER (Hammersmith) (1798-1879), SMITH (Newry), WARE and BARR in England, produced their new varieties, of which some still survive in cultivation to this day, as for instance :

'Aurea'	Jacques introduced 1830
'Celeste' (fig. 19)	Lemon „ 1855
'Mme. Chereau'	Lemon „ 1844
'Darius'	Parker „ 1873
'Gracchus'	Ware „ 1884
'Honorable'	Lemon „ 1840
'Jacquesiana'	Lemon „ 1840
'Mrs. Neubronner'	Ware „ 1895

In 1867 LOUIS VAN HOUTTE of Ghent offered in his catalogue about 100 named varieties of bearded Irises which presumably were the work of LEMON, JACQUES, and SALTER. It was, I believe, the firm of Messrs. BARR of Surbiton, now of Taplow, who first imported these varieties of Irises from the Continent, and no doubt they gave some of them their English names, and also raised and named many seedlings of their



FIG. 10.—IRIS 'CEIFESTE' (p. 96).

[To face p. 96.

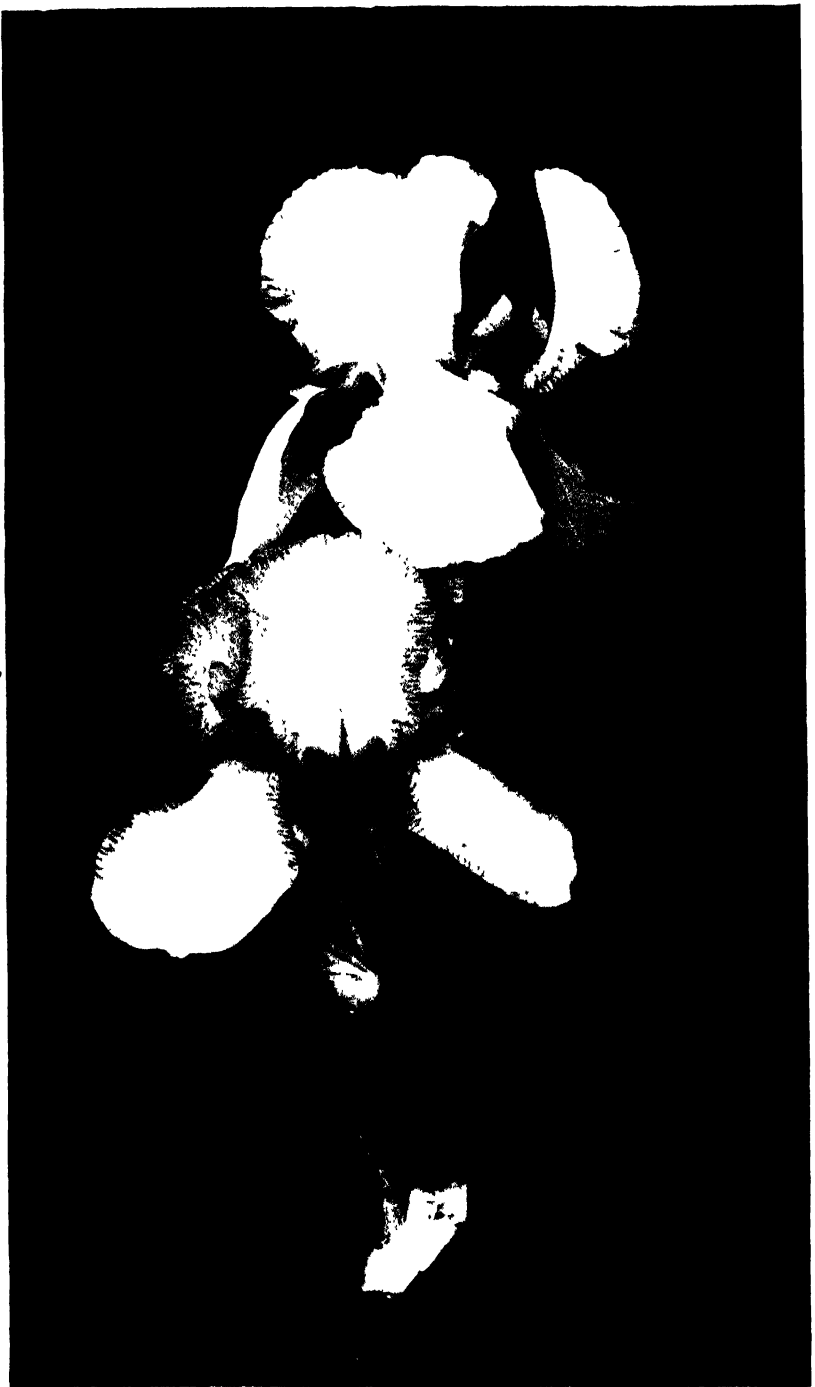


FIG. 20.—IRIS 'E. L. CRANDALL' (p. 122)



FIG. 21.—IRIS 'LEONATO' (p. 126).



FIG. 22.—IRIS 'SWEET LAVENDER' (p. 133).



FIG. 23.—IRIS 'MLLE. YVONNE PELLETIER' (p. 136).



FIG. 24.—IRIS 'ISOLINE' (p. 143).



FIG. 25.—IRIS 'J. C. WELD' (p. 144).



FIG. 26.—IRIS 'MIDAS' (p. 149).

[To face p. 97.

own. Certain varieties attributed to BARR are still in commerce to-day, viz. 'Arnolds,' 'Albert Victor,' 'Albatross,' 'Cottage Maid,' 'Perfection,' 'Dr. Bernice,' and 'Robert Burns.'

It was not until the 'eighties that the introduction of further forms and species enabled the pioneer English amateur to whom we owe so much, Sir MICHAEL FOSTER, to infuse "fresh blood" into the existing forms, and present to commerce the varieties to which we largely owe our present race of "tall" bearded Irises.

The first and most important species to be thus introduced was undoubtedly *Iris trojana*, which arrived from the Troad in 1887. The sturdy growth and branching habit, and the large individual flowers pointed to this plant at once as an admirable parent, and hybridists lost no time in making use of it. About the same time an Iris reached FOSTER from Cyprus named *I. cypriana*, which he immediately proceeded to use in hybridizing. This Iris, too, possessed a branching habit, tall but somewhat flexuose stem, and flowers of large size, though of more straggly form than *I. trojana*. Its use resulted in the raising of such varieties as 'Caterina' (1909), 'Shelford Chieftain' (1909), 'Crusader' (1913), and 'Lady Foster' (1913), which appeared in commerce between the years 1909-1913 and were sent out by Messrs. WALLACE of Colchester. These varieties, particularly 'Caterina' and 'Lady Foster,' have been much used by hybridists of more recent years, and mark an entirely new era in garden Irises.

In 1885 also FOSTER received a form of *Iris germanica* from Amasia, which he called 'Amas,' and which also goes under the name of 'Macrantha.' This plant has also played no small part in the evolution of our modern garden Irises.

We must not overlook the work done by Mr. W. J. CAPARNE in the 'eighties and 'nineties in Guernsey, where, by forcing into bloom some of the June-flowering Irises and crossing them with the early-flowering dwarf Irises, he evolved a new race of intermediate Iris, flowering between the dwarf Chamaeiris and the June-flowering Iris. These plants have been rightly termed "Intermediate," as they are so in time of flowering and in height of stem. All are hardy and very free flowering. Mr. CAPARNE raised some thirty varieties, of which many were named and put into commerce by Messrs. GOOS & KOENEMANN of Germany between the years 1901 and 1908. The best varieties are probably the following: 'Queen Flavia' and 'Etta' as yellows, 'Ivory' and 'Empress' as whites, 'Prince Victor,' 'Royal' and 'Walhalla' among the blues and purples, 'Dorothea' as a porcelain tint, and 'Mars' as a red-purple. In passing I may say that Mr. CAPARNE contributed an article on these Irises to the *Journal* of the Iris Society (No. 3).

It was from 1910 onwards, then, that new varieties of outstanding merit and possessing branching habit, height of stem, and large flowers, were produced, and amongst them appeared 'Alcazar,' sent out by Messrs. VILMORIN, ANDRIEUX & CIE., 1910. This fine Iris, which is most certainly a descendant of *I. trojana*, has probably been used by the

hybridist more than any other Iris of recent times, at any rate up to the arrival of Mr. BLISS's 'Dominion.'

In 1914 two very fine new varieties made their appearance on the Continent, this time from the nursery of Messrs. MILLET, near Paris, namely 'Souvenir de Mme. Gaudichau' and 'Corrida.' The former has become a general favourite on account of its very bright violet-purple colouring, and it is questionable whether it has yet been surpassed in this respect. The second is a generally popular variety also, probably on account of its purity of colour. It is a sky-blue self, free flowering, and a plant which, like 'Souvenir de Mme. Gaudichau,' should be in every collection of Irises.

The War put a temporary check to the appearance of new hybrids, but immediately following, from 1918 onwards, quantities of new varieties appeared, both on the Continent and in England, and enthusiasm for the Iris took hold of the United States, where the cult was followed with the customary zeal, and in January 1920 the American Iris Society was founded and now has 900 members. But during the War the hybridists had not been entirely idle, and I cannot pass over this period without making mention of some very fine new varieties which appeared in this country. I refer particularly to Mr. YELD's 'Lord of June' (1911), 'Neptune' (1916), and 'Asia' (1916), all of which received Awards of Merit in 1916, and two of which at any rate are descendants of either *I. cypriana* or 'Amas.' Mr. YELD between the years 1913 and 1920 also introduced 'Sarpedon' (1913), 'Halo' (1917), 'Emir' (1918), and 'Prospero' (1920), all of which were an advance on many previous introductions for height of stem and size of bloom.

Sir ARTHUR HORT, by the use of 'Caterina' and *I. trojana*, and their descendants, as parents, gave us a series of very fine purple bicolors which appeared in commerce between the years 1919 and 1924, and included such fine varieties as 'Ann Page' (1919) and 'Leonato' (1922), two of the finest Irises in cultivation to-day.

From 1917 onwards quantities of new tall bearded Irises began to appear in commerce from Mr. A. J. BLISS's garden. Mr. BLISS has given us a greater variety of types probably than any other hybridist, and has worked on extremely scientific lines for the past fifteen years. His greatest triumph was achieved in the introduction of 'Dominion' in 1917. This Iris immediately became famous on account of the wonderful velvety substance of its flowers, combined with the richness of its colour. It at once recommended itself to the hybridist and was largely used by all who could get hold of it. Mr. BLISS himself, a few years after its appearance, produced a series of 'Dominion' seedlings in all of which the characteristic feature of the parent, viz. velvety texture of the flower, was apparent. The best of these are probably 'Bruno' (1922), 'Cardinal' (1922), 'Tenebrae' (1922), 'Titan' (1919) and 'Zulu' (1920). 'Dominion' itself is a poor garden plant and increases slowly. It also has a bad fault in the formation of its flower spike, in that the buds cross over the stem in a very cramped manner.

It is for the hybridist to exclude this bad character from its future descendants.

It was at this time (1920) that the firm of Messrs. VILMORIN, ANDRIEUX & CIE sent out their famous trio, viz. 'Ambassadeur,' 'Ballerine,' and 'Magnifica.' Of the merits of 'Ambassadeur' it is not possible to speak too highly; a better garden Iris in every way does not exist, and it must take its place amongst the best 12 Irises in cultivation. 'Ballerine' is another fine Iris, very tall, of rather usual colouring, an obvious *I. trojana* seedling, beautifully branched and with very sweetly scented flowers, but rather a shy bloomer. 'Magnifica' is one of the largest flowered Irises ever raised, and it combines with its size rather unusual colouring, viz. a reddish-violet bicolor, but, alas, it is a wretched "doer" in most gardens, and lucky is the grower who can keep a healthy stock of it!

Now I want to call your attention to the work of another amateur on the Continent. I refer to M. DENIS. M. DENIS has since 1912 produced some of the tallest bearded Irises, and he has accomplished this by using as a parent *I. Ricardi*, a native of Syria. This Iris was sent to M. DENIS by a friend living at Avignon (M. RICHARD by name) who had received it from near Jerusalem, and after whom it was named. M. DENIS sent a piece of this Iris to Sir MICHAEL FOSTER, who called it *I. cypriana* var. *Ricardi*; Mr. DYKES later, however, tells us that it is probably a form of *I. mesopotamica*, which is found in Armenia.

There is considerable confusion surrounding these species, but the long flexuose flower stalk and big straggly flowers seem to be common to both *I. Ricardi* and *I. cypriana*. *I. Ricardi* is *not* hardy in this country. It *must* have a really hot summer, and is impatient of our excessive winter rains.

M. DENIS, living on the Mediterranean near Marseilles, was well located to grow this Iris satisfactorily, but his beautiful hybrids, now in commerce, do not as a whole do themselves justice in our wet climate. Those who have really sheltered or walled gardens, and live in the sunny parts of England, may manage some of them satisfactorily, and I can assure you they are well worth persevering with. Amongst the finest is 'Mme. Durand' (1912), a hybrid of *Ricardi* × 'Darius,' whose biscuit-coloured standards and falls of tawny-buff with the lower half overlaid mauve, carried on four-foot stems, are a sight worth going a long way to see.

'Menetrier' (1921) (*Ricardi* × 'Gracchus') is another nice form, with standards of pale chrome-yellow and falls of a dull yellow washed with plum colour, and is moreover fairly reliable and hardy.

The well-known 'Mlle. Schwartz' (1916) (*Ricardi* × *I. pallida dalmatica*) is another of M. DENIS' seedlings, and is now found in most collections of Irises in this country, and is reasonably hardy. The colour, however, is generally rather washy, and the variety is likely to be superseded by 'Queen Caterina,' an American seedling raised by Miss STURTEVANT.

It was in 1921 and 1922 that Mr. PERRY of Enfield introduced some of his finest productions, some of them unique in that they presented an absolutely new break in colour combination. Mostly tall growing, with stiff stems and flowers of medium to large size, some of them are really great acquisitions to our gardens. The colour break to which I refer is that of "apricot suffused rose," generally confined to the standards, and accompanied by an unusually red-toned fall. The varieties showing these colour characteristics most strongly are 'Abenda,' 'George Yeld,' 'Lord Lambourne,' 'Mrs. H. F. Bowles,' 'Mary Gibson,' and 'Mrs. Cuthbertson.' Mr. PERRY has also given us a large series of *pallidas* and *Cengialti-pallida* crosses, some of which, though rather lacking in substance, are distinctly fine, viz. 'Duke of York,' 'Eden Phillpotts,' 'Lady Charles Allom,' 'Marjorie Tinley,' and 'Mrs. Marion Cran.' The latter was heralded as the finest pink Iris ever raised, which honour is now by some ascribed to Mr. DYKES' 'Aphrodite,' but opinions are not agreed on this matter. The two plants are, however, not comparable, being entirely different forms, so the matter must remain one of individual choice.

Now let us see what was happening in America immediately after the War. There were in 1918 three main growers of Irises in America, and these firms, viz. FARR, STURTEVANT, and FRYER, imported most of the new things from this side of the Atlantic. Mr. BERTRAND H. FARR as early as 1905 imported the first batch of European seedlings into America, and he can be said to have been the pioneer in the Iris movement on that side of the Atlantic. Mr. FARR's most famous introductions include 'Powhatan' and 'Seminole,' two Irises of unusual "red" tones, 'Juniata,' a tall-growing Iris with branched stems and flowers of uniform violet-blue, which has been used very extensively in the U.S.A. as a parent, and 'Quaker Lady,' a universal favourite of the so-called "blended" colour.

Probably the most scientific work in Iris breeding in America of recent years has been carried on by Miss GRACE STURTEVANT of Wellesley Farms, Mass. She has probably not worked on so large a collection as some other growers—in fact, she started with a \$5 collection—but she has, owing to careful selection, given us some very wonderful seedlings during the past ten years. Her most signal success was in 1918 in the production of 'Shekinah,' the first yellow Iris of *pallida* habit. This marked a distinct advance in yellow Irises, and the descendants of 'Shekinah' will further make history in the Iris world—in fact they are making it.

Amongst Miss STURTEVANT's best Irises, so far generally known and grown in this country, may be mentioned 'Queen Caterina' (1918), a seedling of 'Caterina' × 'Queen of May,' and an improvement on both (this Iris will eventually probably supersede 'Mlle. Schwartz'), 'B. Y. Morrison' (1918), with pale lavender-violet standards and falls of velvety raisin-purple with a wide lavender border, 'Dream' (1918), one of the best all-round "garden" pinks in cultivation, 'Afterglow' (1917), and 'Mother of Pearl' (1921), both misty grey lavenders

shaded yellow through the centre of the flower, 'Athene' (1920), an excellent white, and 'True Charm' (1920), a delightful *plicata*.

Mr. FRYER of Mantorville, Minnesota, has also produced many seedlings, which apparently are not hardy in the East, as we have seen very little of them over here.

There are a number of other raisers of Irises in the United States, both amateur and professional, amongst whom may be mentioned Mr. WILLIAMSON of Bluffton, Indiana, whose great seedling 'Lent. A. Williamson' has already made his name well known in the Iris world. This was probably the best Iris raised in America up to three years ago.

Mention also must be made of Mr. J. M. SHULL of Maryland. Mr. SHULL has raised some very fine seedlings by the crossing of *trojana* and 'Lent. A. Williamson,' of which the best is 'Morning Splendour,' which has received the Medal of the Garden Clubs of America for the best seedling introduced in 1923. Other fine seedlings of his are 'Julia Marlowe' and 'Sir Galahad.'

Out in California the late Mr. WM. MOHR has raised wonderful seedlings suitable to the climate of the country, chiefly of *mesopotamica* parentage, with stems of 4 to 5 feet high. His work is being carried on by Prof. SYDNEY MITCHELL of Berkeley, Cal., and thousands of seedlings will flower in this and the following years, of which great things are expected. However, we have yet to see whether these plants will be hardy enough to stand the climatic conditions of this country.

Before closing I should like to say a few words on the late Mr. DYKES' contributions to our collection of bearded Irises. Mr. DYKES not only raised a quantity of seedlings, but also in his wide travels collected some beautiful forms of Iris of many species.

Amongst collected bearded Irises may be mentioned two, viz. 'Istria,' found by Mr. DYKES on the roadside near Fiume, a white form with pale green veinings and pencillings, and 'Cretan,' a dark form of 'Germanica' collected in Crete; both these, however, are May-flowering. Of seedling forms the best known are probably 'Goldcrest' (1914), a bright violet-blue self with golden-yellow beard, 'Sapphire' (1922), an extraordinarily fine violet-blue for massing, about 2 feet high, 'Aphrodite' (1922), a so-called pink Iris with branching habit and stems about 4 feet high, 'Moonlight' (1923), a late May-flowering variety with large flowers of somewhat unusual colouring, the standards being palest amber in colour and the falls smoky sulphury-yellow with greenish reticulations, beard lemon-yellow, 'Amber' (1924), a seedling of 'Shekinah' and a somewhat deeper toned edition of it, and 'Peerless' (1924), a tall-growing plant having flowers of a rich reddish tone of good substance, and with a striking golden beard.

Mr. DYKES also introduced in 1923 a series of early-flowering *pallidas* derived from crossing *I. pallida* with *I. Alberti* (an early-flowering species from Turkestan), of which three varieties are in

commerce (viz. 'Charmian,' 'Cymbeline,' and 'Octavia'). These plants resemble *pallida* in habit, but flower in May instead of in June. Mr. DYKES showed a strong predilection for clear self-colours in his seedlings and was very hesitant about introducing new plants. In fact, I doubt whether any raiser has introduced a smaller percentage of seedlings raised.

The greatest achievement in Mr. DYKES' experiments with bearded Irises was undoubtedly the raising of the large yellow variety which bears his name and which appeared among his seedlings in 1925. This Iris, so far, constitutes the last word in yellow June-flowering Irises, both on account of its great size of bloom and also for its clear colour and smoothness of texture.

I think I cannot do better than conclude on the high note struck by that beautiful writer on beautiful things—EDEN PHILLPOTTS :

"Man has availed himself of the process of evolution in mightier matters than the Iris, but in no theatre of his unsleeping efforts has he awakened truer beauty or purer joy for flower lovers than in the Bearded Irises of June."

SOME RECENT ACCESSIONS TO THE LINDLEY LIBRARY.

By E. A. BUNYARD, F.L.S.

DURING the past year a number of books have been added to the Lindley Library.

If we except the valuable drawings of HOOKER, so happily recovered by the Society (see JOURNAL R.H.S. 52, p. 218), the record shows no remarkable features, but rather a steady filling up of gaps among the older books and some very useful accessions in those of modern authors.

The inclusion of Herbals in a horticultural library may perhaps be questioned by some, but as botany, gardening, and medicine were in early days an undivided branch of the tree of knowledge, early gardening records have to be sought in such works.

Among the early herbalists the name of J. HIERONYMUS BOCK, or TRAGUS, as his latinized name was known, stands out as one of the German fathers of botany, and his close observation and exact description of plants set a new standard in his day. The "Niew Krauterbuch," published at Strasburg in 1539, was at first without illustrations, owing to the poverty of the author. A second edition followed in 1546, illustrated by numerous woodcuts by DAVID KANDEL. The copy now added to the Library is the third edition, which was translated into Latin by DAVID KYBERG.

BOCK is valued as the first real phytographist, or plant describer, since THEOPHRASTUS, and his power of calling up a mental picture of a plant from the written word sprang from real love of plants, above all of living plants. No better example of this could be found than the fact that he was the first botanist to realize that the catkins and red stigmas of the Hazel Nut were flowers and functioned as such. His book is that rare and valuable thing—work inspired by enthusiasm, and as such it has a permanent value.

Another important Herbal added is the "Theatrici Botanici" of CASPAR BAUHIN, the Basle edition of 1658. The author is remembered as the leader of a great advance in accuracy of nomenclature, and his "Pinax," or chart of names and synonyms, has even to this day a value for students.

Several interesting old Catalogues of Botanic Gardens and also Floras have been acquired, notably those of JAN COMMELIN dealing with the garden at Amsterdam and the indigenous plants of Holland, and similar works by PIERRE MAGNOL, PIETRO MICHELI, ROBERT MORISON, TOURNEFORT and others, of which particulars will be found in the printed list.

In the section dealing with florists' books a small work by ROBERT XAVIER MALLET (1775) is of note. The title "*La Beauté de la Nature ou Fleurimanie Raisonnée*" gives an indication of its scope and attitude. The cultivation of Carnations, Auriculas, and the Ranunculus is well treated with first-hand knowledge, and a few chapters on "Greens"—Oranges and the like—are added, as was considered fit by most authors in the eighteenth century. MALLET was a nurseryman at Dunkirk, and was therefore well placed to unite the Dutch and French knowledge of flowers. This book is rare and a welcome addition.

Another work of even greater scarcity is "*Die Rosen*" of ROESSIG, published in Germany in 1802–20, our volume being a French translation made by M. DE LAHITTE. At this date the Rose mania was getting under way in France, most of the famous Rose books coming many years later in the nineteenth century, so ROESSIG has the value of a "cradle book" to all students of Rose history. CREPIN'S "*Monograph on the Rose*," a work still valued by botanists and gardeners alike, is a valuable addition to this section.

The larger Floras of foreign countries are necessary in horticultural libraries, as the "weed" of one country is often the "rarity" of another. The advent of ROUY and FOUCARD'S large "*Flora of France*" is an enrichment of our resources, and will be of special value in these days when Alpine plants find their way to this country more often from France than Switzerland.

Under the heading "*Botanical Travels*" we may note HOOKER and BALL'S "*Journal of a Tour in Morocco*," a work which despite its fifty years of age still fires the reader with the enthusiasm which inspired its authors.

ROBERT FORTUNE'S "*Journey to the Tea Countries of China*," 1852, is another book surprisingly absent from our shelves, and therefore a welcome addition.

Among our modern travellers we have to note several books by Mr. KINGDON WARD, including his valuable "*Rhododendron Notes*."

Several modern works of reference have made their appearance this year, and among these the "*Plantes Alimentaires*" of Professor D. BOIS, of the Jardin des Plantes, bids fair to become a classic. It is in some degree a continuation and extension of his well-known "*Potager d'un Curieux*," and is a mine of reference for all food plants, from the latest exotic vegetable to the great staples of world-wide cultivation. Of special interest are the names of vegetables grown in France for export in different districts, information not easily found in other works.

The awaited monograph of Magnolias by Mr. MILLAIS has made its welcome appearance, and is a valuable addition to our collection.

The growing interest in gardens in Germany is shown by several new books. A beautiful volume on the Dahlia, "*Das Dahlienbuch*," by KARL FOERSTER and CAMILLO SCHNEIDER, sets a high standard of book production which other countries have rarely approached.

An American book upon the Gladiolus, "The Gladiolus Book," by M'LEAN, CLARK and others, deserves notice as evidence of the growing taste for flowers in that country.

Finally, we may note that a representative collection of modern Dictionaries of the principal European languages has been purchased, a helpful addition to students.

The Library Committee will be glad to receive suggestions as to desirable books not already in their collection, and on any other matters which would make the Library more useful to Fellows.

CULTIVATION OF BULBS IN BOWLS.

By G. W. LEAK.

THE growing of bulbs in bowls containing fibre, without drainage, is now probably the most popular method of cultivation for amateurs who want them for indoor display. This method has considerable advantages over that of cultivation in soil, and particularly for those who dwell in town areas ; the chief of these are :

Cleanliness, no escaping water from the receptacle.

Fibre easily obtainable at a cheap rate, whereas good soil cannot always be secured.

Bowls in many forms and colours may be used, the choice of which frequently adds to the beauty of the subject when in flower, instead of the use of rough flower-pots, which certainly do not beautify a room.

Experience has proved that a fairly wide range of bulbous subjects easily respond to this treatment, and that the results, if care is exercised in treatment, are quite equal to, and frequently better than, those obtained in soil. Neglect, however, at any stage simply results in failure.

The best bulbs obtainable are the best for the purpose. It should always be borne in mind that when bulbs are received, if they are of good size, sound and healthy, the flower is already stored up in the bulb and only requires good cultivation to bring it out. In any good bulb of Hyacinth or Narcissus, if it is cut straight down the middle a miniature flower can be seen. The vendor of bulbs is too frequently blamed for the failure to flower, when the failure is solely attributable to some fault in culture.

Fibre.—The best fibre to use is Peat Moss Fibre. This fibre is sometimes sold rather coarse, and when such is the case it should be put on to a fine riddle and thoroughly broken up so that no lumps remain, and it is quite smooth to handle. That allows the roots to penetrate the fibre and also ensures an even distribution of moisture. A little oyster-shell mixed with the fibre is beneficial, but not absolutely essential. A little charcoal *must* be placed on the bottom of the receptacle before putting in the fibre to ensure that the fibre remains sweet. If charcoal is omitted the mixture goes sour, and the roots that are formed will eventually go brown at the tips, growth will be suspended, and small, puny flowers or no flowers at all will be the result.

Specially prepared fibre is sometimes offered, but beyond the above preparation nothing whatever should be added ; any other addition is likely to prove harmful rather than helpful.

With most patterns of bowls that are used it is quite easy when roots are formed to turn out the fibre and bulbs to examine the root

growth, and when healthy the whole of the roots will be quite white. If they are brown, it is a sure indication that something is wrong either in the treatment or the fibre.

The most common cause of failure is allowing the fibre to become dry. If that happens at any stage of the growth failure is inevitable : the roots, failing to find moisture, immediately dry up and the growth is permanently checked. An excess of moisture will rarely do harm. The fact that Hyacinths and Narcissi will grow and flower with their roots in pure water is proof of that ; they have to draw their support from water alone, and it must be there in sufficient quantity for the roots to obtain it. An important factor is the amount of water to add at the time of putting in the bulbs. The fibre should be made just so wet that when pressed in the hand it adheres together without any water coming from it. Fill the bowls with fibre to the rim, then press the bulbs into the fibre until the top of the bulb is level with the rim ; then cover with fibre, rounding it up a little in the centre and pressing the fibre down gently with the hand. The operation of planting is then complete.

Many people are at a loss to know what to do with the bowls after planting, and it is not an uncommon thing to hear that they have been placed in a dark, airless cupboard. That is one of the worst places in which to put them. Those who have no garden and are dependent on, say, a backyard or balcony, should by all means put them in either rather than in any cupboard. Probably the ideal method to follow under such circumstances is to obtain a box or boxes to hold the requisite number of bowls. The box should be of sufficient depth to permit of a covering of 3 to 4 inches of fibre when the bowls are placed in the box. Place the bowls in the box, give them a thorough overhead watering, and then cover them with loose, dry fibre. When placed outdoors the box should be protected from rain, but not in such a way as to shut out light and air.

Those who have a garden where a cold frame is available should place the bowls in the frame, giving them a good overhead watering, then cover them with fibre to a depth of 2 or 3 inches and place the lights over, giving them plenty of air. They need no further attention for from 8 to 10 weeks after planting beyond seeing that mice or rats are not eating the bulbs. Mice are particularly fond of Crocuses and rats of Crocuses and Tulips.

The time for potting the bulbs depends upon the time they are required to be in flower and the amount of heat that is available to bring them into flower.

If bulbs are required to be in flower at Christmas they must be potted early, and it may be here stated that only a few varieties of bulbs can be had in flower at Christmas under this system of cultivation, whatever amount of heat is available. The following are probably the best for Christmas flowering : Roman Hyacinths—these are the easiest of all to bring on for Christmas ; Hyacinth ' L'Innocence,' French grown ; ' Duc van Thol ' Tulips in various colours and ' Mon

Trésor'; Narcissus 'Paper White' and 'Soleil d'Or,' French grown. To get these into flower at Christmas they should be potted as early as obtainable in September, and the general treatment will be the same as for the later flowering bulbs, except that they must be put into gentle heat earlier, say the end of October or early November.

For flowering from the middle of January onwards bulbs should be potted from the middle of September to middle of October, and to the end of October for late flowering.

After the bowls have been placed in their position for the bulbs to root they should be examined after, say, two months, to see if top growth is being made; and if so, the roots may be examined—if the bowl is of such a shape as permits of their being turned out—to see if they are healthy. If the fibre is full of roots and top growth is advanced say 1 to 1½ inch, the bowls may be taken to the light, and regular watering must be attended to. A temperature of 45 degrees at night and 55 degrees during the day is high enough until growth is fairly well advanced; and in the case of Daffodils and Narcissi 50 degrees during the day is quite high enough for the first two to three weeks. Too high a temperature frequently leads to the bulbs going "blind" and failing to throw up a flower. A temperature of 60 degrees should never at any stage be exceeded for Narcissi.

The earliest flowering varieties of Narcissi, like 'Golden Spur' and 'Henry Irving,' if potted in August or the first week in September and treated as before stated, will bloom by the 10th to the 17th of January. If brought into flower earlier the flowers are weak, and not nearly so many flowers are produced. The same varieties potted, say, the last week in September or first week in October will flower about the first or second week in February.

Early-flowering Tulips and Hyacinths potted in August should also flower by the third week in January.

Darwin Tulips and a few Breeders may be grown in the same way, but require much more care to bring them to perfection than do the Hyacinths, Narcissi and early-flowering Tulips. Darwins should not be potted until the first week in October, as if potted earlier they are liable to make too early top growth and throw up buds which never develop into perfect flowers. Darwins should never be taken into heat until the first week in January, and the temperature should then not be more than as for Narcissi. Slow, steady growth is absolutely necessary to ensure success. Water at all times should be given in plenty; a surplus of water at the roots will do little, if any, harm, but dryness of roots is fatal.

Crocuses.—Nothing can be more beautiful than a bowl of Crocuses growing in fibre, and success can easily be obtained if the following course is pursued. Pot the corms in September, planting them thickly in the bowls, and put outdoors or in cold frames the same as for Narcissi and Tulips. About the first week in December any covering should be taken off the bowls and the growth fully exposed to the light. They should not be taken into any heat, but exposed to the weather, frost

doing them no harm, and they should remain outdoors until the flower buds are just showing ; they may then be put into gentle heat, and will flower freely in a week or more according to the temperature.

Yellow Crocuses require a little more care than the other varieties ; they are the first to flower outdoors, but resent being hurried when flowered indoors. They should not be put into any heat until the earliest flowers are well advanced in colour.

Fritillaria Meleagris is one of the easiest of all subjects to grow successfully in fibre. It should be borne in mind that it is a moisture-loving plant, delighting in marshy pastures, and it should therefore be planted in very moist fibre. Top growth commences rather earlier than with other bulbs, and they should be examined at an earlier date. As soon as top growth is advanced they may be put into a warm temperature at once. When growth is fairly advanced they will stand a temperature of 70 degrees.

Dutch Iris is another plant that responds to growing in fibre very easily. The treatment is just the same as for Narcissi, Tulips, and Hyacinths, but the bulbs should be potted early and should not be put into heat until the foliage is well developed. Flowers cannot be expected until the month of March.

Scilla campanulata 'Excelsior' makes a fine bowl when in flower, and the foliage is very beautiful weeks before the flowers expand. *Scilla* 'Excelsior' should not be potted until the first week in October and should be taken indoors early in January ; it should then receive very cool treatment until the flower buds are showing.

The best varieties for growing in fibre are the following :

Hyacinths.—All varieties.

Tulips.—Early flowering : 'Cramoisi Brillant,' all the 'Duc Van Thol,' 'Ibis,' 'Keizerskroon,' 'La Reine,' 'Le Rêve,' 'McKinley,' 'Mon Trésor,' 'Prince of Austria,' 'Queen of Violets,' 'Rose Luisante,' 'Fred Moore,' 'Van der Neer,' 'Vermillon Brillant.' Double varieties succeed well, but always look heavy in bowls. The best are 'Murillo,' 'Couronne d'Or,' 'Safrano,' and 'Vuurbaak.' Darwins, Breeders and May flowering : 'Bouton d'Or,' 'Inglescombe Yellow,' 'Andromache,' 'Fairy' ('Panorama'), 'Adolphe Van den Heede,' 'Bartigon,' 'Clara Butt,' 'Faust,' 'Feu Brillant,' 'La Tulipe Noire,' 'Mrs. Potter Palmer,' 'Pride of Haarlem,' 'Princess Elizabeth,' 'Professor Rauwenhoff,' 'Rev. Ewbank,' 'Wm. Pitt,' 'Wm. Copland.'

Narcissi.—'Emperor,' 'Golden Spur,' 'Henry Irving,' 'King Alfred,' 'Mrs. W. T. Ware,' 'Spring Glory,' 'Sulphur Beauty,' 'Unique,' 'W. P. Milner,' 'Ornatus,' all the Poetaz varieties, 'Albatross,' 'Seagull,' 'Homespun,' 'Sir Watkin,' 'Evangeline,' 'Lord Kitchener,' 'Buttercup,' 'Brightness,' 'Crystal Queen,' 'Brilliancy.'

Crocuses.—All varieties.

THE AWARD OF GARDEN MERIT.—XI.*

76. *TROPAEOLUM POLYPHYLLUM.**Award of Garden Merit, May 30, 1927.*

Native of Chile, whence it was introduced just a century ago, soft and tender, the aerial parts of *Tropaeolum polyphyllum* cannot be expected to survive our winters, but its tubers, if they be planted 9 inches down in well-drained sandy soil in a sunny place, will be safe enough and every year will produce trailing stems of glaucous blue foliage, profusely covered in June with golden-yellow "nasturtium" flowers—a cascade of flowers smaller than those of the well-known annual, but in beautiful contrast with the blue foliage, falling as it should from a high place in the rock garden. The leaves are divided into ten to twelve oblong rather fleshy leaflets, the middle one being trifid.

Tropaeolum polyphyllum was figured in the *Bot. Mag.* at t. 4042.

77. *CISTUS* × *PURPUREUS.**Award of Garden Merit, May 30, 1927.*

Cistus × *purpureus* is a hybrid of great beauty and lavish in its flowering, having as its parents *C. ladaniferus* and *C. villosus* (but how much better than the latter!). Unfortunately it partakes to some extent of the tenderness of *C. ladaniferus*, but it will come unharmed through many of our winters if planted in a sunny place in well-drained soil, though as a precaution young plants (which are easily raised from cuttings of half-ripe wood made in July) should be kept in frames. No plant is better worth this trouble, for in summer over many weeks it produces its reddish flowers (the trivial name by no means expresses the colour—far from it, indeed) measuring 3 inches across with their five conspicuous deep-red blotches at the centre, set on a rounded bush 2 feet to 3 feet high, and (if the winter has saved it) as much through. It is equally fitted for the large rock garden and for the sunny, well-drained border.

It is a natural hybrid, was introduced long ago, and is figured in *Bot. Reg.* t. 408.

78. *SAXIFRAGA* × *ELIZABETHAE.**Award of Garden Merit, March 8, 1926.*

The vast genus of Saxifrages provides the garden with plants for almost all positions and of very diverse habit—some, so free are they

* For earlier annotated lists of Awards of Garden Merit and the grounds upon which the award is given, see vols. 47, p. 189; 48, pp. 58 and 223; 49, p. 233; 50, pp. 100 and 260; 51, pp. 84 and 337; and 52, pp. 82 and 254.

in growth, that they would find themselves in many a gardener's "Index Expurgatorius," others so difficult that the skill and devotion of the most experienced are tried to the uttermost, some so meagre that none desire them, some such gems as to be desired by all. Wild nature harbours many, and brought into the garden the wild forms cross among themselves to produce yet others different and equally desirable. *S. × Elizabethae* is such a hybrid, easier by far to accommodate than *S. Burseriana*, one of its parents, more beautiful than *S. sancta*, the other. The plant when happily placed makes broad carpets of sharp-pointed rosettes of deep green sitting close to the ground, and in early spring produces loose heads of clear soft yellow flowers, bright and round and beautiful, on pink stems about 2 inches long, the individual flowers being nearly stalkless and like the stem bearing white, pink-tipped hairs. As with all its class, the matted growth in time goes brown in the middle (but it lasts longer green than most), and then the plant needs to be dug up, pulled to pieces, and replanted. Any soil seems to suit it if it is open and well drained; a top dressing of stone chips is a help, and it likes any open position.

79. GERANIUM SANGUINEUM LANCASTRIENSE.

Award of Garden Merit, May 30, 1927.

On the sands of Walney Island off the Lancastrian coast grows a dwarfer form of *Geranium sanguineum* with stems clinging fairly closely to the ground, rather more hairy than the type, and bearing clear rosy-pink flowers with deeper veining on their wiry stalks—a lovely thing. It has been brought into the garden and is there one of the most lovely of the Geraniums, bright with flowers from spring to autumn. Its praises have been sung so well by REGINALD FARRER in "The English Rock Garden" that to say more (and one cannot in justice say less) would not more recommend it to the rock gardener. Plant it in a sunny, well-drained place and choose its companions with all the care one would bestow upon a treasure and it will be a joy for years to come.

80. CYCLAMEN NEAPOLITANUM.

Award of Garden Merit, November 2, 1925.

81. CYCLAMEN IBERICUM.

Award of Garden Merit, December 8, 1925.

These two hardy Cyclamen present no difficulties in cultivation, and should be planted in sunny places under thin bushes, or even under pines when the light is not too much obscured. They like lime, but will grow without it. *C. neapolitanum* flowers in autumn before its leaves have come to their full beauty, and it flowers very freely. The flowers vary in shade from white to pink, with a deep crimson spot at the base of each petal. The leaves are like a long ivy leaf in outline,

undulate at the margin and dark green and beautifully marbled with grey and white. The seedlings vary a good bit in the colour and marking of their leaves, and where large numbers have been raised, as may easily be done, selection for beauty of foliage may be carried out with advantage. Seed may be sown in moist but well-drained soil outdoors under a fence or wall, and the seedlings allowed to grow there for a while. Watch will need to be kept so that the seed is collected as soon as it is matured, for mice are remarkably fond of it, and it is by no means easy to protect the capsules from their depredations.

C. ibericum flowers later. It is at its best in winter and very early spring. The flowers appear before the leaves and are smaller than in *C. neapolitanum*, characteristically carmine, with a triangular crimson blotch at the base of each petal, less graceful in outline and pose perhaps than those of *C. neapolitanum*, but pleasant enough to see in the sun or the grey of a January day. The green leaves are cordate or kidney shaped, and almost plane at the edges, instead of being wavy as in *C. neapolitanum*.

82. OMPHALODES CAPPADOCICA.

Award of Garden Merit, March 8, 1926.

Omphalodes cappadocica comes from shady places and hilly copses of Pontus in Asia, and Cappadocia, and thrives in rather shady spots where it is rooted in rich and well-drained loam, and it will succeed on the "dry" wall if properly placed and planted. There, both in early summer and again in autumn, it will produce its sprays of deep blue flowers, like $\frac{1}{2}$ -inch-wide Forget-me-nots, from out a tuft of deep green ovate lanceolate leaves, which often show their grey obverse. Some seek a list of plants which the novice in a rock garden should use to furnish his new venture, and those with youth and inexperience in their favour will readily advise, while those who have learned in the trying school of long and close acquaintance will be more wary, knowing what bitter disappointments may lie behind attempts at growing many of the apparently simple things; but both the ardent youth and the tried lover would say that here is a plant which no rock garden can afford to lack, and which is not so difficult as to demand any but the most simple requirements. It appears in catalogues under its proper name, which we have used here, and also as *O. cornifolia* and *O. Wittmanniana*. It received an Award of Merit in March 1913, when shown by Mr. PRICHARD at Vincent Square, and is figured in our JOURNAL, 39, lvii.

83. ERICA CARNEA 'KING GEORGE.'

Award of Garden Merit, February 21, 1927.

We remarked in our notes on *Erica carnea* (JOURNAL R.H.S. 49, p. 236) that seedlings varied a good deal in colour, and now the Award has been bestowed upon one of the best, because brightest and clearest

in shade, of many named forms. The variety is in every way as vigorous as the type, and no more exacting in its requirements. It was first shown at Vincent Square in January 1922 by Messrs. WALLACE of Tunbridge Wells, when it obtained an Award of Merit, and it is now widely spread and easy to obtain.

84. *ERICA VAGANS* 'ST. KEVERNE.'

Award of Garden Merit, February 21, 1927.

As *Erica carnea* and its varieties make the heath garden gay in winter and early spring, so do *Erica vagans* and its varieties in late summer and autumn, and their dead brown flowers lend colour to the garden too through dull November and the winter before there is need (or reason) for clipping back the growth lest the plants become too leggy. *Erica vagans* is curiously restricted in its distribution in England, for while the great high moor of the Goonhilly Downs is covered, elsewhere it may be sought in vain; yet it is by no means fastidious as to climate and asks only a lime-free soil, sun, and absence of stagnant water. It varies, as all heaths do, in colour, and patient search has discovered some plants worthy of distinction because they are both distinct and distinguished. *E. vagans* 'St. Keverne' is one of them, worthy a place for its clear, clean bright pink colour wherever heaths will grow, compact and pleasing in habit, and free of flower. Though found by Mr. P. D. WILLIAMS not many years ago it is now so widely distributed as to be attainable by anyone.

85. *AMELANCHIER CANADENSIS*.

Award of Garden Merit, May 9, 1927.

When we wrote of *Prunus Avium* fl. pl. in these notes (vol. 50, p. 101) we ventured to assert that it was perhaps the most beautiful of hardy trees when in flower, but in a race *Amelanchier canadensis* would press it closely, and as it is a smaller tree it may find a place in more gardens. Our trees at Wisley are scarcely 18 feet high, and the tree makes a shapely rounded head. It has two seasons of beauty: the first in April, when its small, pure white racemes of flowers expand, while the leaves, then generally tinged pink, are half grown, and again in autumn, when its leaves become rich red or mixtures of red and yellow. No one who has seen it at these seasons can fail to admire it, nor to wish to have it in their gardens, and it is sad that its season of flower beauty is often so short. It needs nothing special in the way of soil so long as it is not over dry or very wet, and it is perfectly hardy anywhere in England. It grows wild in Eastern North America from Newfoundland southward.

For some reason this is often confounded with the European Snowy Mespilus—usually a shrub—very beautiful too, but in autumn at least one that must yield pride of place to its American congener. We

have had this plant (*A. Vulgaris*) sent from nurseries under the name *A. Botryapium*, which is regarded by botanists as a synonym of *A. canadensis*.

The foliage, downy when young on both surfaces, is characteristic of *A. canadensis*.

86. RHODODENDRON VASEYI.

Award of Garden Merit, May 9, 1927.

Like most Rhododendrons lime is anathema to this, and those whose gardens lie on chalk or near limestone would be well advised to content themselves without it, but all who can grow Rhododendrons healthily should plant it. It would make an ornament to any garden. Native of the mountains of Carolina it is hardy in England. Its rounded clear pale pink flowers, spotted with red-brown within, are quite distinct from those of any other American Azalea (for it is a deciduous Rhododendron or Azalea), and they are borne in clusters of four to eight in early May before the leaves expand. The bush grows to 12 feet or more in height in its native home, but usually not so tall here. There is a figure in the *Bot. Mag.* t. 8081.

87. LUPINUS 'SUNSHINE.'

Award of Garden Merit, May 30, 1927.

Perennial Lupines are too familiar to everyone to need description, but only recently has the colour range been much extended, and this is one of the best of the new forms, bright and satisfactory under ordinary good cultivation and giving a touch of yellow to the herbaceous border at a season when yellow flowers are not very abundant.

MAGNOLIA SINENSIS AND M. NICHOLSONIANA.

By J. E. DANDY, B.A., F.L.S.

THROUGH the kindness of Mr. P. D. WILLIAMS, of Lanarth, Cornwall, I have been able to confirm the suspicion, which I had previously held, that at least some of the plants passing as *Magnolia Nicholsoniana* in this country do not belong to that species at all but to *M. sinensis*.

M. sinensis was originally described by REHDER and WILSON ("Plantae Wilsonianae," vol. 1, p. 393) under the name *M. globosa* var. *sinensis*, and was recently elevated to specific rank by STAPF (*Bot. Mag.*, vol. 149, sub t. 9004). It was collected by WILSON in Szechuan, and differs in several ways from the true *M. globosa*, which is a closely related species occurring from Sikkim and Darjeeling to south-eastern Tibet. The leaves of *M. sinensis* are large, obovate or broadly elliptic, and usually rounded at the apex.

M. Nicholsoniana was also collected by WILSON in Szechuan, and was described by REHDER and WILSON ("Plantae Wilsonianae," vol. 1, p. 394) at the same time as *M. Wilsonii* and *M. globosa* var. *sinensis*. As I have already explained (*JOURNAL R.H.S.*, 52, p. 263), the material now available shows that *M. Nicholsoniana* cannot be retained as a distinct species, and should be regarded as synonymous with *M. Wilsonii*. This species has smaller, much narrower and more oblong leaves than *M. sinensis*, not rounded at the apex as in that species.

The material sent to me by Mr. WILLIAMS was from a plant which was supposed to be *M. Nicholsoniana*, but which has the broad, rounded leaves of *M. sinensis*, of which it is a perfect match. Mr. WILLIAMS informed me that the plant is one of WILSON's from China, which was sent from the Arnold Arboretum to M. CHENAULT of Orleans for propagation. Doubtless by an oversight it was sent out as *M. Nicholsoniana* instead of as *M. globosa* var. *sinensis*.

I append a list, with synonyms, of the four species which make up this very natural section of the genus *Magnolia*.

1. *M. GLOBOSA* Hook. f. et Thoms. (including *M. tsarongensis* Sm. et Forrest).

2. *M. SINENSIS* Stapf (*M. globosa* var. *sinensis* Rehd. et Wils.).

3. *M. WILSONII* Rehd. (including *M. Nicholsoniana* Rehd. et Wils. and *M. taliensis* W. W. Sm.).

4. *M. PARVIFLORA* Sieb. et Zucc. (including *M. oyama* Kort and *M. Sieboldii* C. Koch). *M. × Watsonii* Hook. f. is a hybrid between this species and *M. obovata* Thunb. (*M. hypoleuca* Sieb. et Zucc.).

BEARDED IRISES TRIED AT WISLEY, 1925-27.

THE collection of Bearded Irises at Wisley has been of gradual growth ever since the Society entered upon the Garden in 1904. Its foundation was laid by the collection got together for the trial judged in 1903 in the south part of the old gardens at Chiswick and moved to Wisley in 1904. The progeny of many of the varieties planted then was included in the present trial, and they illustrate excellently the plants available for gardens twenty-five years ago, and by comparison the great advance those years have witnessed. From time to time varieties were added from various sources, and especially at the time of the subsequent trial judged in 1916, so that when the Iris Society approached the Council asking that an Iris trial garden should be established at Wisley there was already a large collection to form a nucleus, short, however, of the many fine seedlings that had been sent out subsequent to the appearance of 'Dominion' and 'Alcazar'—the two varieties that represented the highest stage to which the Iris had reached fifteen years ago.

The Council readily acquiesced in the request of the Iris Society, and arrangements were made along similar lines to those already made with the National Dahlia Society, whereby the Royal Horticultural Society arranges to grow at Wisley such varieties as are from time to time available and for them to be judged when ready by a jury appointed jointly by the Royal Horticultural Society and the Iris Society under the Chairmanship of a representative of the Council of the Royal Horticultural Society.

An open sunny site of about half an acre of the sandy loam previously used as a vegetable trial ground was set aside for the purposes of the trial, and a dressing of powdered chalk was given to it. It was deeply dug (bastard trenched) and dressed with basic slag at the rate of 6 lb. to the square rod, and some bone meal was given at planting time.

Raisers were invited to send their new varieties for trial, and the invitation met a ready response from English, French, and American sources, and the varieties originally planted were from time to time added to. So far as possible the classification agreed upon as a result of the last trial (see JOURNAL R.H.S., 47, p. 6) was followed, and the varieties grouped according to their heights and colours. No full list of this classification has hitherto been published, as it was found that the lists originally made were faulty. They have been subjected to revision from time to time, and in considering those that follow it should be remembered that it is often with border-line varieties a matter of personal opinion as to which class a variety is best accommodated in. The Director of Wisley, who desires to take full responsibility for any error in their present allocation, has endeavoured to place them in the classes for which their group effects in the garden best fit them.

The Judging Committee examined the plants from time to time and finally "scored" the majority of the varieties as the most satisfactory means of evaluating them. In doing this not only were floriferousness and form and colour of flower duly valued, but hardiness, resistance to disease (especially rhizome rot and leaf spot), freedom of increase, stance, appearance of foliage were all taken into account, and as a result the nine hundred odd varieties in the trial were grouped into four sections.

In Section I were placed the varieties which up to the time of judging had shown outstanding excellence. To these awards were made by the Council of the R.H.S. on the recommendation of the Judges, and their names are printed in thick type in the notes which are given below.

In Section II were placed the varieties which scored almost equally well and which in the opinion of the Judges are at present worthy a place in any garden where Irises can be grown.

In Section III were placed the varieties which had not at the time of judging had an opportunity of showing what they were really capable of. This was usually either because they had not been growing in the trials sufficiently long, or because the minimum number of three plants had not been available at the time of planting. In a few other instances the Judges wished to see and compare the varieties for a longer period than had passed.

In Section IV were placed the remaining varieties upon which judgment had been passed, and these may be regarded as for some reason or other of lower garden value than those in Sections I and II, and of more historical than present-day interest, though many are very floriferous and hardy and make a brave show in the garden.

After the judging, as most of the varieties had occupied the same site for three years, replanting was undertaken, and the tall Bearded Irises are now arranged as follows :

Several plants (usually twelve) of each variety in Sections I and II above have been planted in beds arranged in their Colour Classes as set out in the classification already referred to and used below. These varieties (about 140) constitute the "Standard Collection" of the ensuing notes.

Three plants of each variety in Section III above have been planted in the same beds according to their colours, so that comparison may be easy and judgment simplified.

Clumps of each variety in Section IV have been planted in a separate part of the garden, so as to maintain a collection as complete as possible and still to give opportunity for observation and comparison of these varieties.

It should be borne in mind (if surprise is felt at the position of some of the varieties) that judgment has been passed solely on the grounds of value as seen under ordinary garden conditions. All varieties have been treated alike and no special cultivation or protection given to any. Probably few who grow Irises for the magnificence of the individual flower would expect 'Asia,' for instance, to fall short of

A.M., but few who look upon Irises as ornaments of the garden to which no very special attention is given would long consider such an award well bestowed. One rather breezy day just as the buds of this fine Iris had begun to emerge from their sheaths three stems were snapped off as we stood by—others followed. Later when we were asked where 'Asia' was we could not stand and point to its glorious flowers, for the stems were bent and lay here and there so that they were hidden though but a short distance away. It could have been saved by staking, of course, but that would have been special favour meted out to a particular Iris when 'Alcazar' and 'Aphrodite,' 'Sikh' and 'Corrida' not far away needed nothing of the kind, and so it was scored against. Who will give us 'Asia' with a stiff, strong stem worthy to hold such flowers?

In addition to the colour grouping and the place the varieties hold in the Judges' estimation, the following notes show the general nature and height of the foliage and flowering stems, give details of size, poise, and colouring of parts of the flower, and say where scent is a marked character, and the approximate order and length of flowering. The actual heights given are probably less than may be attained in many seasons, for the late frost of April and the dry weather of May had their influence, and the actual time of flowering will vary from year to year, but in general the relative order is maintained. There is little variation from year to year at Wisley in the length of time a variety remains in flower, three weeks being the time for most except in Class VII, where there are many extending to four weeks, with odd flowers opening over six weeks.

Finally, an alphabetical list of Bearded Irises at present growing or which have recently been growing at Wisley is appended, to act as an index to the descriptions and notes and also to show where gaps in our collection occur, so that those who would wish to see it complete may know what we still require and hope for.

CLASS I. WHITE, OR NEARLY WHITE VARIETIES.

Tall Varieties.

Istria, A.M. 1927. A very vigorous free-flowering plant of rapid increase with glaucous foliage about 18 inches high. Flowering stems 24 inches, generally 3 fld. Flowers of medium size, well proportioned, stiff; standards domed with waved, somewhat recurved margins, $2\frac{1}{2} \times 1\frac{1}{2}$ inch; falls nearly straight, $2 \times 1\frac{1}{2}$ inch; both falls and standards white with a very slight bluish tinge, veined at base with green; crest white; beard white tipped sulphur. Flowering for three weeks from May 14, 1927.

This is a white form of *germanica* collected by Mr. W. R. Dykes on the roadside between Fiume and Abbazia. Introduced 1922. Sent by the Orpington Nursery Co.

White Knight, A.M. 1927. Vigorous and rapid of increase, very free-flowering. Foliage glaucous-green, about 22 inches high. Flowering stems 26 to 28 inches, about 8 fld. Flowers of medium size, fairly well proportioned, stiff; standards domed, tips somewhat notched, with waved recurved margins, $2 \times 1\frac{1}{2}$ inch; falls hanging straight down, $1\frac{1}{2} \times 1\frac{1}{2}$ inch; both standards and falls white with purplish-brown veins at base; crest white; beard white except for slight yellow tips. Flowering for three weeks from June 3, 1927.

Raised by Dr. A. P. Saunders of Clinton, New York. Introduced 1916. Sent by the Orpington Nursery Co.

Mystic, A.M. 1927. Vigorous, free, and of rapid increase. Foliage glaucous-green, 18 inches high. Flowering stems 20 to 22 inches, erect. Generally 6 to 8 fld. Flowers on short branches, rather close, of medium size, well proportioned, stiff; standards domed, waved at margins, $2\frac{1}{2} \times 1\frac{1}{2}$ inch; falls drooping, $1\frac{1}{2} \times 1\frac{1}{2}$ inch; both falls and standards white with violet veining at base; style-arms, crest, and beard white, the last tipped bronzy-orange. Flowering for a fortnight from May 26, 1927.

This forms a transition to the next class, and is a much improved 'Mrs. H. Darwin.' Raised by Mr. A. J. Bliss at Morwellham. Introduced 1923. Sent by the Orpington Nursery Co.

ATHENE. A vigorous plant of rapid increase. Foliage bright yellowish-green, 22 inches high. Flowering stem 28 inches, erect, about 6 fld. Flowers of medium size, well proportioned, white with purplish-brown veining at base; beard orange tipped. Flowering for three weeks from May 27, 1927.

Raised by Miss Sturtevant at Wellesley, U.S.A. Introduced 1920. Sent by the Orpington Nursery Co.

UNNAMED WHITE. Vigorous and of rapid increase. Foliage glaucous-green, 22 inches high. Flowering stems 30 inches, erect, usually 4 fld. Flowers larger than in 'Istria'; standards cupped; falls drooping; whiter than 'Athene' in all parts, with faint creamy veins on haft of falls and rarely faint blue blotches on base of standards; beard tipped orange. Flowering for three weeks from May 16, 1927. This variety came named in error from Messrs. Barr and has not been definitely recognized.

MOUNT ATHOS. Taller than preceding by about four inches, without the blue spots at base of standard and with lemon-tipped beard; otherwise similar. Flowering for three weeks from May 11, 1927.

Sent by Mr. G. P. Baker.

KASHMIR WHITE. Fairly vigorous, with yellowish-green foliage, 18 inches high. Flowering stems erect, about 3 feet, 4 or 5 fld.; flowers close, of medium size; standards domed, white; falls hanging straight down, creamy white; beard white tipped orange. Flowering for a fortnight from May 23, 1927. A.M. 1914. A variety long grown at Wisley and sent also by Mr. G. P. Baker.

WHITE QUEEN. A vigorous plant of rapid increase with glaucous-green foliage, 18 inches high. Stems about 24 inches; erect, usually 5 fld. Flowers of medium size, well proportioned, stiff; standards cupped; falls drooping; ivory-white, with greenish tinge in centre of falls and standards; beard tipped pale sulphur. Flowering for over three weeks from May 19, 1927.

Sent by Messrs. Wallace of Tunbridge Wells. Originally called 'Queen Mary.'

The following varieties in Class I. are planted with the foregoing for future judgment, having (for the most part) been received later and under observation for a shorter time:

CYGNET (Sturtevant).	MICHELINE CHARRAIRE (Denis).
DENT BLANCHE (G. P. Baker).	MILKY WAY (Sturtevant).
FLAVESCENS ALBA (Perry).	MRS. PERRY (Perry).
FLORENTINA QUEEN EMMA (Perry).	MOONLIGHT (Dykes).
IVORY (G. P. Baker).	TAJ MAHAL (Sturtevant).
LEOTA (Fryer).	THESEUS (Hort).

The following varieties in this class have been put into the General Collection and may be regarded as superseded:

- ALBICANS (called also PRINCESS OF WALES); 18 inches; May (A.M. 1891).
- BALARUC; 24 inches; June. Near 'White Knight' (A.M. 1920).
- BLANCHE BLEUTHE.
- BOLINGBROKE; 40 inches; May-June.
- *CERES; 22 inches; May.
- DAWN; 22 inches; June.
- FLORENTINA; 24 inches; May.
- FLORENTINA ALBA; 24 inches; May.
- HORACE; 22 inches; May.
- INGEBORG; 20 inches; May (A.M. 1916).
- INNOCENZA (called also L'INNOCENCE); 32 inches; June.
- KING CHRISTIAN; 18 inches; May.
- LA NEIGE; 18 inches; June.
- MISS WILLMOTT; 22 inches; May.
- *ODIN; 22 inches; May.

* These varieties are scarcely distinguishable in flower.

PURITY ; 32 inches ; June.

SAMITE ; 26 inches ; June (creamy-white ; transition to Class VIII b).

SARAH ; too much like ' Ingeborg.'

SILVER QUEEN ; 28 inches ; June. Of ' Kashmir White' type—a transition to Class V a.

The following varieties have been in cultivation at Wisley in recent years, but are not now represented there :

GERMANICA ALBA ; 27 inches ; May.

MRS. GEORGE DARWIN (Foster) ; 23 inches ; June.

Semi-dwarf Varieties.

SNOWCAP, H.C. 1927. Vigorous and of rapid increase. Foliage grey-green, about 8 inches high. Flowering stems 10 inches, with one or two flowers. Flowers small, well proportioned, satiny-white with occasionally a faint blue tinge, the midrib of the style being pale blue ; beard tipped pale lemon ; texture thin. Flowering for three weeks from April 28, 1927.

Raised by Messrs. Goos & Koenemann, and sent by the Orpington Nursery Co. Known as ' Schneecuppe' on the Continent.

Plants grown at Wisley for some years under the names ' SNOWDROP,' ' PUCK,' and ' SNOWCUP' were very similar to this, but rather taller in flower.

SIMPLICITY (Orpington) also belongs to this class.

The following varieties have been cultivated at Wisley in recent years, but are not now represented there :

BRIDESMAID (Perry) ; 16 inches ; May.

JULIET (Barr) ; 8 inches ; April-May.

Dwarf Varieties (5 to 6 inches).

The Bride, A.M. 1927. Of moderate vigour and rapid increase. Foliage green, 5 to 6 inches high. Flowering stems 5 to 6 inches, 2 fld. Flowers small, well-proportioned, stiff ; standards somewhat domed, $2 \times 1\frac{1}{2}$ inch ; falls hanging straight, $1\frac{1}{2} \times 1\frac{1}{2}$ inch ; white with faint bluish tinge. Flowering for a fortnight from May 5, 1927.

Sent by Messrs. Barr.

SERAPHIN, H.C. 1927. Of vigorous growth and rapid increase. Foliage dark green, 5 inches high. Flowering stem 5 inches, single fld. Flowers small, fairly well proportioned, at first creamy-white, becoming white when open ; falls and crest with bluish markings ; beard tipped yellow. Flowering for three weeks from April 27, 1927.

Raised by Messrs. Vilmorin and sent by Messrs. Barr.

Other varieties in this class are :

ELEGANCE ; 7 inches ; April-May.

JOCK ; 6 inches ; May.

PANDORA ; 7 inches ; April-May.

THISEE ; 7 inches ; May.

CLASS II. WHITE FEATHERED WITH PURPLE.

The purple feathering may be blue-purple or red-purple, and it may be confined to the margins of the segments or diffused over their surface. Room will have to be found in this class for varieties in which the ground colour is yellow or cream, not white, as in the majority of the varieties known at present.

There are thus eight possible subdivisions, viz. :

A. White ground.

a. Colour confined to margins of segments.

(1) Feathering blue-purple.

(2) Feathering red-purple.

b. Colour suffused over segments.

(1) Blue-purple.

(2) Red-purple.

B. Yellow ground.

a. Colour confined to margins of segments.

(1) Feathering blue-purple.

(2) Feathering red-purple.

b. Colour suffused over segments.

(1) Blue-purple.

(2) Red-purple.

The varieties falling into this class are subdivided below into these groups.

No variety adjudicated upon in Class II was regarded as of sufficiently high standard to warrant an Award of Merit, and the class at present contains no dwarf or semi-dwarf early-flowering varieties.

CLASS II A a (1).

Varities with blue-purple feathering confined to margins of segments which are otherwise white.

DIMITY. Vigorous and of rapid increase. Foliage glaucous-green, 18 inches high, drooping above middle. Flowering stems 30 to 32 inches, erect, zigzag, 6 to 8 fld. Flowers very close, well proportioned, stiff, of medium size; standards domed, $2\frac{1}{2} \times 1\frac{1}{2}$ inch, with wavy margins, white lightly speckled with silvery-lavender; falls $1\frac{1}{2} \times 1\frac{1}{2}$ inch, slightly waved at the margins, creamy-white with light feathering of amparo-purple at margins; crest and midrib of style-arms lavender. Flowering for three weeks from June 1, 1927.

Raised by Mr. A. J. Bliss and sent by Messrs. Wallace.

POCAHONTAS. Habit of last, but foliage stiffer. Flowering stems 24 inches, straight, 4 to 5 fld. Flowers close, well proportioned, stiff, of medium size; standards rather cupped, circular, $1\frac{1}{2}$ inch, margin slightly waved with deep lilac-purple feathering; falls $1\frac{1}{2} \times 1\frac{1}{2}$ inch, drooping, feathered at margin with lilac; crest deep lavender; beard white, tipped orange. Scented. Flowering for three weeks from May 23, 1927.

Raised by Mr. Farr and sent by Messrs. Wallace.

MIMI. Vigorous and of rapid increase. Foliage glaucous-green, 20 to 24 inches high. Flowering stems 30 to 32 inches high, erect, usually 5 fld. Flowers close, of medium size, well proportioned, stiff; standards domed, $2\frac{1}{2} \times 1\frac{1}{2}$ inch, margins recurved, wavy, heavily feathered and spotted dark bluish-lavender; falls drooping, $1\frac{1}{2} \times 1\frac{1}{2}$ inch, margins nearly plane, coloured like standards towards haft, style-arms and crest dark bluish-lavender; beard white, lightly tipped yellow. Flowering for three weeks from May 23, 1927.

Raised and sent by Mr. A. J. Bliss.

MA MIE. Habit of last, but foliage 18 inches high. Flowering stems 24 inches, erect, straight; flowers usually four, very closely set, rather small, well proportioned and stiff; standards domed, $2\frac{1}{2} \times 1\frac{1}{2}$ inch, margins waved, veined and feathered pale lavender-violet; falls hanging straight down, $2 \times 1\frac{1}{2}$ inch, coloured as standards; crest and middle of style-arms lavender-violet; beard white, tipped orange. Flowering for three weeks from May 20, 1927.

Raised by Messrs. Cayeux and sent by Messrs. Barr.

CAMELOT. Habit and foliage like 'Ma Mie,' but 24 inches high. Flowering stems 32 inches, 8 fld. Flowers small, close, well proportioned, stiff; standards waved, $1\frac{1}{2} \times 1\frac{1}{2}$ inch, margins waved, veined and suffused lavender; falls

sigmoid and tucking back, $1\frac{1}{2} \times 1\frac{1}{2}$ inch, margins feathered lavender; crest lavender; beard tipped orange. A paler and redder plant than 'Ma Mie.' Flowering from May 26, 1927, for three weeks.

Raised by Mr. Bliss, introduced 1918, and sent by Messrs. Lowe & Gibson.

The following varieties in this class have been planted with the Standard Collection for future judgment:

AKSARBEN (Sass).	*MME. CHEREAU (Lemon).
E. L. CRANDALL (Farr) (fig. 20).	OPHELIA.
JEANNE D'ARC (Verdier), A.M.	TRUE CHARM (Sturtevant).
1916.	BLUE CHINTZ (Burton).
JUBILEE (Sass).	

The following varieties in this class are also growing at Wisley, outside the General Collection:

GAZELLE; 28 inches; June.
 HILDA; May-June.
 KESTON BLUE; 32 inches; May-June.
 LE RÊVE; 28 inches; May-June.
 MME. GUERVILLE; 24 inches; May-June.
 PRINCESS OSRA; 28 inches; June.
 ROSE SALTERNE; June.

The following varieties have been grown at Wisley in recent years, but are not now represented there:

AGNES (from Messrs. Barr); 24 inches; May-June.
 ASSYRIE (from Messrs. Barr); 36 inches; June.
 COMTESSE DE COURCY (from Messrs. Barr); 30 inches; May.
 MARY (Reuthe); 48 inches; May-June.
 UNIQUE (from Guildford H. P. Nursery); 30 inches; May-June.

CLASS II A a (2).

Varieties with red-purple feathering confined to margins of segments which are otherwise white.

Planted for further trial:

ALETHA (Farr).
 BEAU IDEAL (Sass).
 PRINCESS TOTO (Bliss).

The following varieties belonging to this class are planted in the General Collection:

BELLE HORTENSE; 24 inches; May-June.
 FANTASY; June.
 FRANCINA; 24 inches; May-June.
 MARITANA; 26 inches; May-June.

CLASS II A b (1).

Varieties with a white ground spotted and feathered over the segments with blue-purple.

KITTY REUTHE. A plant of moderate vigour with glaucous-green foliage about 15 inches high. Flowering stems 24 inches, rather zigzag, 4 fld. Flowers close, well proportioned, of medium size, fragrant; standards domed, $2 \times 1\frac{1}{2}$ inch, creamy-white with bright lavender-violet suffusion; falls drooping, $1\frac{1}{2} \times 1\frac{1}{2}$ inch, margins slightly waved, veined bright lavender-violet; style branches of same colour; beard white, with slight orange tip. Flowering for three weeks from May 26, 1927.

Raised by Mr. G. Reuthe and sent by Messrs. G. Bunyard of Maidstone.

DONNA MARIA. Foliage rather taller than 'Kitty Reuthe.' Flowering stems 26 inches, zigzag, 6 fld. Flowers close, well proportioned, of medium size, faintly scented; standards domed, $2 \times 1\frac{1}{2}$ inch, white, heavily suffused lavender-violet; falls drooping, blade $1\frac{1}{2}$ inch long and wide, creamy-white with heavy lavender-violet suffusion at tips, margins slightly waved; styles and crests lavender-violet; beard white, tipped with orange. Flowering for three weeks from May 21, 1927.

* Has been sent to trials under the name 'Gloriosa.'

CLASS II A b (2).

Varieties with a white ground spotted and feathered over the segments with red-purple.

PARISIANA. Vigorous and rapid of increase with glaucous-green foliage, 18 to 20 inches in height. Flowering stems, 26 inches, erect, zigzag, 8 fld. Flowers close, well proportioned, of rather more than medium size; standards arching, somewhat domed, $2\frac{1}{2} \times 2\frac{3}{4}$ inches, heavily speckled and suffused with amparo-purple, margins recurved; falls hanging straight down, blade $1\frac{1}{2} \times 1\frac{3}{4}$ inch, creamy with recurved margins, speckled amparo-purple; beard white, tipped orange. Flowering for a fortnight from May 27, 1927.

Raised by M. Vilmorin.

A plant wrongly named 'Alma' was also grown at Wisley, and proved to be identical with this.

BYRON. Very similar in general effect to 'Parisiana,' but flowering stems 30 inches; flowers rather smaller; standards domed. Flowering for about a fortnight from May 27, 1927.

Raised by Mr. Bliss and sent by Messrs. Wallace.

MADAME DE STAËL. A vigorous plant of rapid increase with green foliage, 24 inches tall. Flower stems 28 inches, nearly straight, 6 fld. Flowers close, of medium size, well proportioned; standards domed, with margins wavy and slightly recurved, $2\frac{1}{2} \times 2$ inches, white heavily suffused phlox-purple; falls hanging straight down, blade $1\frac{1}{2} \times 1\frac{1}{2}$ inch, like style-arms pencilled and dotted at the margin with phlox-purple; crests bronzy-brown; beard white, tipped orange. Flowering for a fortnight from May 25, 1927.

Sent by Mr. G. L. Pilkington.

Varieties belonging to this class still under trial planted in the Standard Collection are:

MIDWEST (Sass).

PRINCE CHARMING (Sturtevant).

Growing in the General Collection are:

BARTONI.

MRS. MAURICE PRICHARD; 18 inches; May-June.

MADAME DE SÉVIGNÉ; 24 inches; June.

The following variety has been grown in recent years at Wisley, but is not now represented there:

HELEN REUTHE (Reuthe); 21 inches; June.

CLASS II B.

Few varieties with a yellow ground are known yet, and it is unnecessary to set out the groups at length. In the Standard Collection is:

ZOUAVE. A vigorous variety of rapid increase with glaucous-green foliage, 20 inches high. Flowering stems 26 inches, nearly straight, 5 fld. Flowers well proportioned, of medium size; standards domed, $2\frac{1}{2} \times 2$ inches, pale hortense-violet with a paler centre, the veining distinct; falls hanging straight, blade $1\frac{1}{2} \times \frac{7}{8}$ inch, veined and dotted rich hortense-violet; styles pale hortense-violet; crests pale amparo-purple; beard tipped orange. Flowering from May 27, 1927, for a fortnight.

Raised, introduced and sent by Messrs. Vilmorin-Andrieux of Paris.

For further trial are:

IONA (Sass).

KING KARL (Sass).

Planted in the General Collection are:

DANIEL LESUEUR; 24 inches; June.

MERCEDES; 24 inches; June.

CLASS III. WHITE STANDARDS, COLOURED FALLS.

a. Colour confined to veins.

Tall Varieties.

Planted in the General Collection :

COMTE DE ST. CLAIR ; 22 inches ; June.
 DUCHESSE DE NEMOURS ; 26 inches ; June.
 FAIRY ; 30 inches ; May-June.
 TENDRESSE ; 26 inches ; June.
 WILLIE BARR ; 24 inches ; June.

'Tendresse' and 'Comte de St. Clair' make a transition to the group with confluent colouring on the falls.

ADONIS ; 28 inches ; June.
 CALYPSO ; 30 inches ; May-June.
 STELLA ; 26 inches ; May-June.

'Stella' makes with its quickly fading pale lavender standards a transition to Class IV. 'Adonis' is almost identical with it. Another variety under the name 'Adonis' has been grown belonging to Class VII c.

The following varieties have been grown at Wisley in recent years, but are not now represented there :

AIKA (from Messrs. Barr) ; 18 inches ; May-June.
 FAIRY QUEEN (from Forbes) ; 15 inches ; May-June.
 ENID (Perry) ; 23 inches ; May-June. (Standards very light blue.)
 MARGARET (from Barr) ; 10 inches ; May.
 MORPHEUS (from Perry) ; 18 inches ; June.
 PENELOPE (Perry) ; 21 inches ; June.
 RETICULATA ALBA ; 29 inches ; June.

b. Colour confluent over falls.

Tall Varieties.

Rhein Nixe, A.M. 1927. Vigorous and of rapid increase; foliage glaucous-green, 24 inches high. Flowering stems 32 inches, erect, 6 to 8 fld. Flowers well proportioned, of medium size; standards cupped, almost erect, $2\frac{1}{2} \times 1\frac{1}{2}$ inch, white; falls $1\frac{1}{2} \times 1\frac{1}{2}$ inch, drooping, phlox-purple, with margins whitish; style-arms and crests white; beard orange, tipped bronze. Flowering for a fortnight from May 26, 1927.

Raised by Messrs. Goos & Koenemann in 1910 and sent to Wisley by several persons many years ago. A.M. 1916.

ECLAIREUR. Habit of 'Rhein Nixe,' but foliage rather yellow. Flowering stems 26 to 28 inches, erect, 6 to 8 fld. Flowers well proportioned, larger than in 'Rhein Nixe'; standards domed, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, white faintly tinged reddish-violet; falls $1\frac{1}{2} \times 2\frac{1}{2}$ inches, hanging straight down, phlox-purple with paler margins; style branches and crests tinged lilac; beard white, with pale orange tips. Flowering for three weeks from May 26, 1927.

Raised by M. Cayeux and sent by him.

B. Y. MORRISON. Vigorous and of rapid increase, foliage glaucous-green, 24 inches. Flowering stems 26 to 28 inches, erect, 8 fld. Flowers of medium size, well proportioned; standards domed, $2\frac{1}{2} \times 1\frac{1}{2}$ inch, pale lavender; falls rather drooping, blades $2 \times 1\frac{1}{2}$ inch, purplish-violet, distinctly veined on haft; beard pale yellow. Flowering for a fortnight from June 1, 1927.

Raised by Miss Sturtevant, introduced 1918, and sent by the Orpington Nurseries.

For further trial the following varieties in this class have been planted with the Standard Collection :

DOROTHEA (Caparne) (A.M. 1916).
 ETOILE DU MATIN (Vilmorin).
 JULIUS CAESAR (Nonne & Hoepker).

SILVERDALE (Perry).
 THORA PERRY (Perry).
 TINTALLION (Sturtevant).

The following varieties in this class are planted in the General Collection

ALBATROSS; 26 inches; June.
 BANBO; 22 inches; June.
 BOCCAGE; 22 inches; May-June.
 CANDELABRE; 30 inches; May-June.
 DIAMANT; 18 inches; May. Near 'Niphetos.'
 DUC DE NEMOURS; 27 inches; June.
 GEOMORI; 22 inches; May-June.
 LAURA; 30 inches; May-June.
 NAKOMIS; 34 to 36 inches; June.
 NIPHETOS; 18 inches; May.
 POITEAU; 22 inches; June.
 QUEEN OF THE DALE; 32 inches; June.
 RADIANCE; 26 inches; June.
 RICHARD II; 22 inches; June (A.M. 1916).
 ROLETTE; 30 inches; May-June (makes transition to Class IV a).
 TERESITA; 30 inches; June.
 THORA; 22 inches; June.
 THORBECKE; 33 inches; June.
 TRISTRAM; 30 inches; June.
 VICTORINE; 30 inches; May-June (F.C.C. 1886).
 VIRGINIE; 26 inches; May-June.
 WAGNER; 18 inches; June.
 WYOMISSING; 28 inches; May-June.

The following varieties have been grown at Wisley in recent years, but are not now represented there:

CLIO (from Barr); 24 inches; June.
 GLORINETTE (Barr); 26 inches; June.
 MR. GLADSTONE; 30 inches; June.

Semi-dwarf Varieties.

The following semi-dwarf varieties of this class are in the General Collection at Wisley:

GRISEA; 12 inches; May.
 AIXA; 16 inches; May-June.

Dwarf Varieties.

The following dwarf varieties belonging to Class III are growing at Wisley

BLUE BEARD; 6 inches; April.
 MISS C. M. OWEN; 9 inches; May.
 PUMILA; 6 inches; April-May.

CLASS IV. PURPLE BICOLOR VARIETIES WITH STANDARDS PALER THAN THE FALLS.

A very large class falling into the following groups:

- a. Standards pale blue-purple (lavender).
- b. Standards dark blue-purple.
- c. Standards pale red-purple.
- d. Standards dark red-purple.

It is not always easy to say where the line should be drawn between a-b, a-c, b-d, c-d, or where the division between this Class and Class V should be made, but in this Class the difference in colour of falls and standards is always fairly marked and often quite definite.

CLASS IV a.

Purple bicolor varieties with standards pale blue-purple.

Tall Varieties.

Lord of June, A.M. 1927. A vigorous plant of rapid increase, with glaucous-green foliage, 22 inches high. Flowering stems 36 inches high, erect, rather zigzag, 8 to 10 fld. Flowers rather close, well proportioned, fragrant; standards at first domed, but floppy, with slightly waved margins, $3\frac{1}{2} \times 3$ inches, pale lavender; falls hanging straight down, blade $2\frac{1}{2} \times 2\frac{1}{2}$ inches, margins recurved, lavender-violet; crests and style-arms pale lavender; beard white, tipped orange. Flowering for three weeks from May 23, 1927. A.M. 1915.

Raised by Mr. G. Yeld and sent by Messrs. Lowe & Gibson.

Leonato, A.M. 1927. Habit of 'Lord of June,' but foliage a little shorter. Flowering stems 5 to 6 fld., with rather larger spaces between flowers; flowers fragrant, well proportioned, but standards rather floppy; standards domed, with slightly waved margins, $3\frac{1}{2} \times 2\frac{1}{2}$ inches, lavender; falls hanging straight down, blade $2\frac{1}{2} \times 2\frac{1}{2}$ inches, pale lavender-violet; beard white, tipped yellow. Flowering for a fortnight from May 31, 1927. (Fig. 21.)

Raised by Sir A. Hort and sent by Messrs. Wallace.

Titan, A.M. 1927. Vigorous and of rapid increase with glaucous-green foliage, 22 to 26 inches high. Flowering stems 28 to 30 inches, straight, 5 fld.; flowers very close, well proportioned, stiff; standards domed, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, bright rosy-lavender; falls drooping, blade $1\frac{1}{2} \times 2\frac{1}{2}$ inches, rich auricula-purple with white beard tipped pale orange. Flowering for three weeks from May 26, 1927.

Raised by Mr. A. J. Bliss and sent by the Orpington Nursery Co.

NEPTUNE. Vigorous and of rapid increase; foliage glaucous-green, 20 inches high. Flowering stems 36 inches, 7 fld., well spaced; flowers well proportioned, stiff, fragrant; standards somewhat domed, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, slightly waved at margins, lavender; falls hanging straight down, blade $2\frac{1}{2} \times 2$ inches, violet-blue with paler margins; beard white, tipped yellow. Flowering for a fortnight from June 1, 1927. (A.M. 1905.)

Raised by Mr. Yeld and sent by Messrs. Waterer & Crisp.

DOLPHIN. Vigorous and of rapid increase, with rather lax green foliage, 18 inches high. Flowering stems 20 inches, straight, 2 fld. Flowers well proportioned, stiff, strongly fragrant; standards erect, 2×2 inches, bright lavender-blue; falls drooping, blade $1\frac{1}{2} \times 1\frac{1}{2}$ inch, velvety nigrosin-violet, paler at the margins; beard white, tipped orange. Flowering for three weeks from May 5, 1927.

Raised by Mr. Caparne and sent by Messrs. Barr.

YEOMAN. Rather slow of increase, with glaucous-green foliage, 21 inches high. Flowering stems 36 inches, straight, 5 or 6 fld., flowers close, fairly large, of excellent shape; standards domed, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, pale lavender-blue; falls hanging straight, blade $2 \times 2\frac{1}{2}$ inches, rich nigrosin-violet, beard tipped yellow. Flowering for three weeks from May 23, 1927.

Raised by Mr. A. J. Bliss and sent by the Orpington Nursery Co.

ARIADNE. Foliage glaucous-green, 22 inches high; flowering stems 32 inches, 8 fld. Flowers close, well proportioned, stiff, scented; standards domed but rather floppy, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, lavender; falls hanging straight down, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, lavender-violet, paler towards the tip; beard tipped lemon. Flowering for a fortnight from May 18, 1927.

Raised by Mr. W. R. Dykes and sent by the Orpington Nursery Co.

EGLAMOUR. Vigorous and of rapid increase, with glaucous-green foliage, 18 to 20 inches high. Flowering stems 20 to 24 inches, 4 to 5 fld. Flowers well proportioned but rather floppy; standards $3\frac{1}{2} \times 2\frac{1}{2}$ inches, soft bluish-violet; falls hanging straight down, blades $2\frac{1}{2} \times 2\frac{1}{2}$ inches, rich petunia-violet; beard tipped bright orange. Flowering from May 21, 1927, for three weeks.

Raised by Sir Arthur Hort and sent by Messrs. Wallace.

LEONE TRENANCE. Vigorous and of rapid increase, with glaucous-green foliage, 20 inches high. Flowering stems 24 to 26 inches, straight, 5 or 6 fld.; flowers well proportioned and stiff; standards cupped, 2×2 inches, soft pale bluish-violet, falls drooping, $1\frac{1}{2} \times 2$ inches, coloured like standards but of more rosy shade; beards tipped deep orange. Flowering for a fortnight from May 20, 1927.

Raised by Mr. Bliss and sent by Messrs. Wallace.

SARPEDON. Foliage glaucous-green, 21 inches high; flowering stems 36 inches, almost straight, 8 fld.; flowers well proportioned, rather floppy, large, scented; standards domed, with margins somewhat waved, $3 \times 2\frac{1}{2}$ inches, rich lavender-violet; falls straight-hanging, blades $2\frac{1}{2} \times 2\frac{1}{2}$ inches, velvety nigrosin-violet. Flowering for a fortnight from May 30, 1927. A.M. 1902.

Raised by Mr. G. Yeld and sent by Messrs. Waterer & Crisp.

DU GUESCLIN. Habit of last. Flowering stems 27 inches, zigzag, 8 fld. Flowers well proportioned, stiff, of medium size; standards domed with wavy margins, $2\frac{1}{2} \times 1\frac{1}{2}$ inch, deep lavender; falls drooping, blades $1\frac{1}{2} \times 1\frac{1}{2}$ inch, deep rich violet-blue, with lavender margin. Flowering for a fortnight from May 30, 1927.

Raised by Mr. Bliss and sent by Messrs. Wallace.

FAITH. Of rather slow increase, compact, foliage glaucous-green, 12 to 15 inches high. Flowering stems 22 inches, erect, straight, 5 to 6 fld. Flowers very close, well proportioned, stiff; standards cupped, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, lavender-violet; falls hanging straight, blades broadly spatulate, $1\frac{1}{2} \times 2$ inches, rich violet. Flowering for a fortnight from June 1, 1927.

Raised by Mr. Bliss and sent by Messrs. Wallace.

The following varieties have been planted for future judgment in Class IV a :

IVANHOE (Millet).	MAGNIFICENT (Fryer).
NEREUS (Yeld).	BERTRAND (Bliss).
HYPERION (Bliss).	HUBERT (Hort).
BARONET (Sturtevant).	ANN PAGE (Hort) (A.M. 1920).
ORIFLAMME (Vilmorin) (A.M. 1916).	ECKESACHS (Goos & Koenemann).
W. C. TERRY (Perry).	PTE. W. A. LOGAN, M.M. (Perry).
MOPSA (Hort).	SALAWAT (G. P. Baker).
SWATARA (Fair).	SYBILA (Stern).
SPEED (Hort).	LUSTRE (Dykes).
MRS. TYNLEY (Bliss).	BLUE LAGOON (Bliss).
MERCUTIO (Yeld).	JUNIATA (Fair).
AUTOCRAT (Cleveland).	SIR MICHAEL (Yeld).
CRUSADER (Foster).	GENERAL GALLIENI (Millet).
MRS. W. J. FRYER (Fryer).	RHEIN TRAUBE (Goos & Koenemann).
DR. CHAS. H. MAYO (Fryer).	ALVARES (Lemon).
	KALIF (Sturtevant).

The following varieties are planted in the General Collection :

AMBROSE WISEMAN.
 APHYLLA OSIRIS; 20 inches; June.
 ARAC; 42 inches; June.
 *ARGENT; 30 inches; June.
 *ASSYRIAN; 30 inches; May-June.
 BALLERINE; 38 inches; June.
 BAZARIA; May-June.
 BEAUTY; 30 inches; June.
 BELGICA; 26 inches; May-June.
 BELLONA; 16-18 inches; May-June.
 BENRIMO; June.
 BILLIOTTII; 28 inches; June.
 BOUGAINVILLE; 26 inches; June.
 BRIDESMAID (Salter); 24 inches; May-June.
 †CARTHUSIAN; June. Near V a. (A.M. 1908).
 CATERINA; 36 inches; June (A.M. 1907, 1916).
 CENGIALTI AMMON; 40 inches; May-June.
 CHANCELLOR; 32 inches; May-June.
 CLARA CURTIS; 36 inches; June.
 †COTTAGE MAID; 30 inches; May-June.
 CYBELE; 24 inches; May-June.
 CYPRIANA; 40 inches; June.
 *CYTHERE.
 DEJAH; 40 inches; May-June.
 DEMETRI; June.

* Transition to Class IV b.

† Transition to Class III.

‡ Approaches to Class V a.

- DIANE ; 30 inches ; May-June (A.M. 1916).
 DUCHESS SARAH ; June.
 DUKE OF YORK ; 32 inches ; June.
 E. A. BOWLES.
 EDNA MERCIA ; 30 inches ; May-June.
 E. H. JENKINS ; 36 inches ; June.
 EMPRESS OF INDIA ; 32 inches ; May-June.
 ERATO ; 34 inches ; May-June.
 FREYA ; 24 inches ; May.
 FRITJOF ; 24 inches ; May.
 GABRIEL ; 36 inches ; June.
 HAMILCAR ; 36 inches ; June.
 HAWTHORNE ; 30 inches ; May-June.
 HAYDN ; 18 inches ; May ; like ' Charmant.'
 HELIO ; 26 inches ; May-June.
 HERALD ; 25 inches ; May-June.
 HERWARD ; 18 inches ; April-May ; like ' Charmour' and scarcely distinguishable from ' Mandraliscae.'
 HERMOINE ; 36 inches ; May-June.
 HESTIONES ; 28 inches ; June.
 IGNACITE ; 24 inches ; May-June. Sent to previous trial as ' Ignatia.'
 INCOMPARABLE ; June.
 JUNONIA ; June.
 KHEDIVE ; 30 inches ; May-June.
 KORUS ; 28 inches ; May-June.
 LADY FOSTER ; 30 inches ; May-June (A.M. 1916).
 LADY SACKVILLE ; June.
 LADY SEYMOUR ; 30 inches ; May-June.
 LAGO DI GARDA ; 24 inches ; May-June.
 LAMBRUS ; June.
 LEONIDAS ; 36 inches ; May-June.
 *LEPINOUX ; 38 inches ; May-June.
 LETTICE ; 24 inches ; May-June.
 LULWORTH ; 34 inches ; May-June.
 LUPPRANINI ; 20 inches ; June.
 MME. S. ANTISSIER.
 MADONNA ; 36 inches ; May-June.
 MAGNIFICA ; 36 inches ; June.
 MAJESTIC ; 32 inches ; May-June.
 MANDRALISCAE ; 17 inches ; May.
 MECELLA ; 32 inches ; May-June.
 MIKADO ; 20 inches ; May.
 MIRIAM ; 22 inches ; June.
 MISS MAGGIE ; 30 inches ; May-June.
 MISTRESS FORD ; 30 inches ; June.
 MONASTIR ; 30 inches ; June.
 M. DE SIBLE ; 32 inches ; June.
 MORWELL ; 26 inches ; May-June (A.M. 1916).
 NINE WELLS ; 50 inches ; June.
 OSIS ; 24 inches ; June. Much like ' Luppranini.'
 PALADIN ; May-June.
 PATIENCE ; 34 inches ; June.
 PERFECTION ; 30 inches ; June.
 PONTOS ; 34 inches ; June.
 PRINCESS ROYAL ; 36 inches ; June.
 PROPENDENS ; 30 inches ; May-June.
 PROSPERO ; 36 inches ; June (A.M. 1920).
 PROTEUS ; 34 inches ; June.
 REGAN ; 30 inches ; May-June.
 RETICULATA SUPERBA.
 RICARDII.
 RINGDOVE ; 36 inches ; May-June (A.M. 1917).
 ROTORUA ; 36 inches ; May-June.
 SARACEN ; 30 inches ; June.
 SELMA ; May-June.
 SHALIMAR ; June.

SHELFORD CHIEFTAIN ; 36 inches ; May-June.
 SOMERCOATES ; 38 inches ; May-June.
 STAMBOUL ; 36 inches ; May-June.
 SYMPATHY ; 32 inches ; May-June.
 TAMERLAN ; 34 inches ; May-June.
 TINEAE ; 32 inches ; June.
 TROJANA ; 30 inches ; May-June.
 TROJANA SUPERBA ; 38 inches ; June.
 VINCENTIO.
 VOLUMNIA ; 32 inches ; June.
 WALHALLA ; 24 inches ; May.
 WALNER ; 30 inches ; May-June.

The following varieties have been grown at Wisley in recent years, but are not now represented there :

BACCHUS ; 34 inches ; June.
 GUINEVERE ; 24 inches ; May-June.
 KITTY KINGSBURY ; 24 inches ; June.
 RIVA (Perry) ; 36 inches ; June.
 TOPAZ (R. Veitch) ; 16 inches ; June.

Semi-dwarf Variety.

LIBRA. Plant of 10 inches, with green foliage 7 inches, vigorous, and of rapid increase. Flower small, well proportioned, slightly creped ; standards conical, $1\frac{1}{2} \times 1\frac{1}{4}$ inch, soft bluish-violet ; falls $1 \times \frac{1}{2}$ inch, sigmoid, nigrosin-violet, with lavender-blue margins. Scented.

Raised by Mr. Caparne and sent by Messrs. Barr.

Dwarf Varieties.

PRINCESS LOUISE. Plant of 6 to 7 inches, of rapid increase and compact habit. Flowers small, well proportioned, slightly creped ; standards domed, $1\frac{1}{2} \times 1$ inch, pale blue-violet ; falls $1\frac{1}{2} \times \frac{1}{2}$ inch, drooping, pale blue-violet veined light violet.

Sent by Messrs. Barr and grown also as 'Pumila Princess Louise.'

PUMILA COERULEA. Habit of last but standards rather larger, bright sax-blue, falls bluish-purple with pale sax-blue margins. Sent by Messrs. Barr.

NUDICAULIS ; 8 inches ; April-May.

CLASS IV b.

Purple bicolor varieties with falls deep blue-purple.

Tall Varieties.

Souvenir de Mme. Gaudichau, A.M. 1927. Vigorous and of rapid increase, with erect glaucous-green foliage, 25 inches high. Flowering stems 34 inches straight, 6 fld. Flowers closely set, rather large, well proportioned and stiff, well scented ; standards domed, broadly ovate, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, rich dark bluish-violet ; falls deeper, rich royal bluish-purple, $2 \times 2\frac{1}{2}$ inches, hanging straight down ; beard blue, tipped deep orange. Flowering for three weeks. A.M. 1924.

Raised by M. Millet, introduced 1914, and sent by Mr. G. P. Baker and Messrs. Wallace.

Tenebrae, A.M. 1927. Vigorous and of rapid increase, with glaucous-green foliage, 20 inches high. Flowering stems 30 inches, nearly straight, 8 fld. Flowers medium large, well proportioned, stiff, scentless ; standards cupped, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, mulberry-purple with bronzy tinge ; falls drooping, rich velvety fluorite-violet, $1\frac{1}{2} \times 1\frac{1}{2}$ inch ; beard tinged yellow in upper half.

Like 'Lent A. Williamson' and 'Germaine Perthuis' best fitted here for garden effect.

Raised by Mr. A. J. Bliss and sent by the Orpington Nursery Co.

SIRDAR. Vigorous and rapid of increase, with glaucous-green foliage, 24 inches high. Flowering stems 36 inches, straight, 5 fld. Flowers closely set, well proportioned but rather floppy, extra large, scented ; standards somewhat domed, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, deep lavender-blue ; falls hanging straight down,

$2\frac{1}{2} \times 2\frac{1}{2}$ inches, bright violet-purple darker in middle; beard white, tipped yellow. Flowering for three weeks from May 23, 1927.

Raised by Mr. Perry and sent by Messrs. Barr.

MOA. Vigorous and of rapid increase with glaucous-green foliage, 26 inches high. Flowering stems 40 inches, apt to twist and curl, 5 fld. Flowers closely set, well proportioned, large, stiff; standards domed, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, rosy lavender-violet; falls straight hanging, $2 \times 2\frac{1}{2}$ inches, rich nigrosin-violet; beard tinged bright orange. Flowering for three weeks from May 23, 1927.

Raised by Mr. A. J. Bliss and sent by the Orpington Nursery Co.

PELOPIDAS. Vigorous and of rapid increase with glaucous-green foliage, 18 inches high. Flowering stems 32 inches, rather zigzag, 6 to 8 fld. Flowers well proportioned, stiff, rather large; standards domed, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, bluish-lavender; falls $2 \times 2\frac{1}{2}$ inches, hanging straight, deep bluish-violet; beard bluish, tipped orange. Flowering for three weeks from June 1, 1927.

Raised and sent by Mr. Perry.

ABDERA. Plant as in 'Pelopidas,' but foliage 24 inches high. Flowering stems 36 inches, straight, 5 fld. Flowers large, well proportioned, and at first stiff but inclined to flop in age, scented; standards domed, $3\frac{1}{2} \times 3$ inches, pale lavender-violet; falls hanging straight, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, nigrosin-violet; beard white, tipped orange. Flowering for a fortnight from May 17, 1927.

Raised and sent by Mr. Perry.

CENTURION. Habit of 'Abdera.' Flowering stems 7 or 8 fld. Flowers large, well proportioned, and stiff, scent faint; standards domed, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, pale bluish-violet, with smoky-brown veins at base; falls drooping, $2 \times 2\frac{1}{2}$ inches, rich velvety nigrosin-violet; beard orange in upper half. Near 'Dominion,' but paler. Flowering for three weeks from May 23, 1927.

Raised by Mr. Bliss and sent by the Orpington Nursery Co.

LENT A. WILLIAMSON. Very vigorous and of rapid increase, with glaucous-green foliage, 22 inches high. Flowering stems 36 inches, erect and straight, 4 or 5 fld. Flowers large, well proportioned, stiff, faintly scented; standards cupped, almost circular, $2\frac{1}{2}$ inches diam., smoky violet-purple; falls hanging straight, $2 \times 2\frac{1}{2}$ inches, bright blue-purple with somewhat paler margins; beard bright orange. Flowering for three weeks from May 28, 1927.

Raised by Mr. Williamson and sent by the Orpington Nurseries.

This variety might be placed in Class VI, but for general effect in the garden it comes best here.

GERMAINE PERTHUIS. Of moderate vigour and increase, with glaucous-green foliage, 18 inches high. Flowering stems 36 inches, erect, straight, 5 fld. Flowers large, well proportioned and stiff, strongly scented; standards domed, $3 \times 2\frac{1}{2}$ inches, dull with bronzy-violet; falls hanging straight, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, bright rich nigrosin-violet, velvety; beard bright orange. Flowering for three weeks from May 28, 1927.

Sent by Messrs. Cayeux.

Like the last, might find a place in Class VI.

DUKE OF BEDFORD. Very vigorous, with glaucous-green foliage, 24 inches high. Flowering stems 40 inches, nearly straight, 5 to 6 fld., well spaced. Flowers large, well proportioned, stiff, scented; standards rather cupped, $3 \times 2\frac{1}{2}$ inches, bronzy violet-blue; falls hanging straight, $2 \times 2\frac{1}{2}$ inches, velvety, deep rich nigrosin-violet; beard orange in upper half. Flowering for three weeks from May 28, 1927.

Raised by Mr. Bliss and sent by Messrs. Wallace.

DOMINION. Very vigorous but of slow increase, with glaucous-green foliage, 24 inches high. Flowering stems 28 inches, nearly straight, 5 to 8 fld., close. Flowers well proportioned, stiff, scented; standards domed, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, pale violet; falls hanging straight, $1\frac{1}{2} \times 2\frac{1}{2}$ inches, very velvety, deep rich nigrosin-violet; beard white, tipped orange. Flowering for three weeks from May 30, 1927. Rather shy. Buds cross over stem. A.M. 1916.

Raised and sent by Mr. A. J. Bliss.

The following varieties belonging to Class IV *b* are planted with the Standard Collection and await further judgment:

CYPRIANA SUPERBA (van Tubergen).	SHALBRUZ (Baker).
TARCHON (Yeld).	ZULU (Bliss).
ORIENTAL (Farr).	MEGAS (Denis).
AUTUMN (Sass).	TIMUR (Sturtevant).
PENDRAGON (Bliss).	MINOS (Perry).
SWAZI (Bliss).	AMY BRANDON THOMAS (Perry).
POLARIS (Sturtevant).	DR. POTTER (Fryer).

The following varieties also belong to Class IV *b* and are planted in the General Collection :

ALBERT VICTOR; 21 inches; May.
 AMAS; 22 inches; May.
 ANNE BULLEN; 28 inches; May-June.
 ANTONIO; 28 inches; May-June.
 APHYLLA DITTON PURPLE.
 ARLEQUIN; 30 inches; June.
 BLACK PRINCE; 28 inches; June. A.M. 1900.
 BLUE JAY; 30 inches; June.
 CASSANDRA; 28 inches; May-June.
 CATIGERN; June.
 CENGIALTI PURPUREA.
 CRETAN; 28 inches; May. Also called 'Germanica cretica.'
 EMIR; 40 inches; June.
 EZRA; 30 inches; June.
 FLORENTINA PURPUREA; 26 inches; May.
 FONTARABIE; 20 inches; May.
 GERMANICA; 28 inches; May.
 GERMANICA TURCHINO; 26 inches; May.
 GERTRUDE; 30 inches; May-June.
 GLORY OF READING; 28 inches; June.
 HADABRA; 36 inches; May-June.
 KASHMIRIANA (blue form); May-June.
 MACRANTHA; 28 inches; May.
 MAJOR; 26 inches; May. Also grown in trials as 'Germanica major.'
 MISS DOROTHY ROWE; 30 inches; May-June.
 MONSIGNOR; 20 inches; June.
 NARGARA; May-June.
 NATIONALE; 30 inches; May-June.
 PEGASUS.
 PETER BARR; 36 inches; May-June.
 PETER THE GREAT; 18 inches; May.
 PETIT VITRY; 28 inches; June.
 PINAFORE; 26 inches; May-June.
 PRINCE VICTOR; 20 inches; May. A.M. 1916.
 RAFFET; 26 inches; June.
 SIWAS; 28 inches; May.
 SULTANA; June.
 VELOUTE; 24 inches; June.
 ZADOR; 36 inches; May-June.

The following varieties have been grown at Wisley in recent years, but are not now represented there :

GERMANICA VIOLACEA (various sources); 30 inches; May.
 OTHELLO (from R. Veitch); 20 inches; June.
 CHAMELEON (from Barr); 26 inches; June.
 LILACINA; 33 inches; May-June.
 MAGNET (from Barr); 24 inches; June.
 MAJESTIAN (Perry); 28 inches; June.
 TROJANA MAGNIFICA (from Barr); 28 inches; May.

Semi-dwarf Varieties.

The following varieties from 10 to 16 inches in height growing at Wisley belong to Class IV *b* :

GORGEOUS, H.C. 1927. Plant of rapid increase, with green foliage 10 inches high. Flowering stems 12 inches, 2 fd. Flowers small, well proportioned; standards $2\frac{1}{2} \times 1\frac{1}{2}$ inch, conical, bright mulberry-purple; falls sigmoid, $1\frac{1}{2} \times 1$ inch, nigrosin-violet, margins slightly paler; beard white, tipped orange. Flowering for three weeks from April 26, 1927.

OBELISQUE, H.C. 1927. Habit of 'Gorgeous.' Strongly scented. Standards domed, $1\frac{1}{2} \times 1\frac{1}{2}$ inch, bright madder-violet; falls drooping and incurved, $1\frac{1}{2} \times 1$ inch, dark anthracene-violet with paler margins; beard tipped orange. Flowering for three weeks from April 26, 1927.

BLUE STONE; 10 inches; April-May.
 DON CARLOS; 15 inches; April-May.

EXCELSA; 12 inches; April-May.

FORMOSA; 12 inches; April-May.

SRINAGAR; 14 inches; May.

Dwarf Varieties.

Varieties up to 9 inches in height at flowering time. Falling into this class are:

COUNT ANDRASSY, H.C. 1927. Of rapid increase, with green foliage, 5 inches high. Stems 1 or 2 fld., 6 inches. Flowers small, of excellent shape and good substance; standards domed, $1\frac{1}{2} \times 1\frac{1}{2}$ inch, bright madder-violet; falls drooping, with $1\frac{1}{2} \times 1$ inch blades, dark madder-violet; beard white, tipped orange. Flowering for three weeks from April 27, 1927.

ATROVIOLEACEA; 6 inches; April-May.

BLUE STANDARD; 9 inches; April-May.

GARRICK; 5 inches; April-May.

GRANDEE; 6 inches; April-May.

HARLEQUIN; 7 inches; May.

ROSALIE; 6 inches; April-May.

SAMBO; 9 inches; April-May.

SAPPHIRE; 7 inches; April-May.

STANDARD; 9 inches; April-May. 'Carl' as grown at Wisley proved identical with this variety.

TOPSY; 6 inches; April-May.

URANUS; 7 inches; April-May.

The following variety has been grown at Wisley in recent years, but is not now represented there:

ECLIPSE (Barr); 6 inches; April-May.

CLASS IV c.

Varieties with pale red-purple standards lighter than the falls.

Imperator, A.M. 1927. Vigorous and of rapid increase. Flowers stems erect, 6 to 10 fld. Flowers stiff, well proportioned, of medium size, strongly scented; standards domed with ragged recurved margins, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, dull phlox-purple; falls hanging straight, blades $2\frac{1}{2} \times 2$ inches, bright red-purple, with darker centre; beard white, tipped yellow. Flowering for three weeks from May 31, 1927.

This belongs to the darker end of this class and might with almost equal propriety be included in Class IV d.

Sent by Messrs. Cayeux.

DAINTY MAID. Very vigorous and rapid of increase, with glaucous-green foliage, 26 inches high. Flowering stems 42 inches, erect and straight, 4 fld. Flowers stiff and well proportioned, slightly scented, larger than 'Imperator'; standards cupped, $2\frac{1}{2} \times 2$ inches, light mauve with a very faint shade of yellow at margin; falls hanging straight, blades $2 \times 2\frac{1}{2}$ inches, rosy mauve; beard white, orange tipped. Flowering for three weeks from May 19, 1927.

Raised and sent by Mr. Perry.

MRS. F. C. STERN. Vigorous and of rapid increase with slightly glaucous foliage, 20 inches high. Flowering stems 28 inches, erect and straight, 3 to 4 fld. Flowers of medium size, stiff and well proportioned; standards domed, $2\frac{1}{2} \times 1\frac{1}{2}$ inch, light amparo-purple; falls hanging straight, blades $1\frac{1}{2} \times 1\frac{1}{2}$ inch, dull phlox-purple; beard white, tipped orange. Flowering for over three weeks from May 16, 1927.

Raised by Mr. A. Perry and sent by Messrs. Perry and Wallace.

GERMAINE LE CLERC. Foliage taller than last and more glaucous. Flowering stems 32 inches, erect and straight, 4 or 5 fld. Flowers of medium size, well proportioned and stiff; standards domed, $2 \times 1\frac{1}{2}$ inch, light phlox-purple with distinct veining; falls very drooping, blade $1\frac{1}{2} \times 1\frac{1}{2}$ inch, rosy violet-purple with distinct veining; beard tipped yellow. Flowering for over three weeks from May 20, 1927.

Raised by Messrs. Cayeux and sent by the Orpington Nursery Co.

HAKADOR. Vigorous, and of rapid increase, with green foliage, 18 inches high. Flowering stems 34 inches, slender, erect, 4 fld. Flowers of medium size, stiff and well proportioned; standards domed, with recurved wavy margins, $2\frac{1}{2} \times 2$ inches, mauve; falls $1\frac{1}{2} \times 1\frac{1}{2}$ inch, hanging straight, Mathew's purple. Flowering for three weeks from May 21, 1927.

Raised and sent by Mr. Perry.

ROMOLA. Vigorous and of rapid increase, with glaucous-green foliage, 24 inches high. Flowering stems 36 inches, straight, 8 fld. Flowers very large,

well proportioned, stiff, strongly scented; standards $3\frac{1}{2} \times 2\frac{1}{2}$ inches, domed, with slightly waved margins, mauve; falls hanging straight, blades $2\frac{1}{2} \times 2\frac{1}{2}$ inches, velvety, deep dahlia-crimson; beard tinged lemon in upper half. Flowering for three weeks from May 26, 1927.

Raised by Mr. A. J. Bliss and sent by the Orpington Nursery Co.

MRS. E. B. LARGE. Habit of last, but stems 5 or 6 fld. Flowers large, stiff, well proportioned, scented; standards domed, circular $2\frac{1}{2}$ inches diam., smoky liseran-purple on yellow ground; falls hanging straight down, blades almost circular, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, magenta on white ground; beard white, tipped yellow. Flowering for three weeks from May 19, 1927.

Placed in this class for general effect, but this and the next might be placed in Class VI *a* (2) on account of the yellow in standards. Raised and sent by Mr. A. Perry.

FERONIA. Habit of last, but 40-inch stems, somewhat zigzag, 6 fld. Flowers medium large, stiff, well proportioned, scented; standards domed, $2\frac{1}{2} \times 2$ inches, dull Chinese violet on cream; falls hanging straight down, $1\frac{1}{2} \times 2\frac{1}{2}$ inches, Mathew's purple with darker veins; beard white, tipped yellow. Flowering for three weeks from May 23, 1927.

Raised and sent by Mr. Perry.

ROSEWAY. Vigorous, of rapid increase, with glaucous-green foliage, 20 inches high. Flowering stems 38 inches, erect, zigzag, 8 fld. Flowers of medium size, well proportioned, stiff, faintly scented; standards domed, $2 \times 1\frac{1}{2}$ inch, rich reddish amparo-purple; falls drooping, blades $1\frac{1}{2} \times 1\frac{1}{2}$ inch, deeper than standards; beard orange. Flowering for three weeks from May 27, 1927.

Raised by Mr. A. J. Bliss and sent by Messrs. Wallace.

BRILLIANT. Foliage taller than last, 24 inches. Flowering stems 32 inches, nearly straight, 6 fld. Flowers of medium size, scented, well proportioned and stiff; standards domed, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, light phlox-purple; falls hanging straight down, $1\frac{1}{2} \times 2\frac{1}{2}$ inches, Rood's violet; beard with orange tips. Flowering for three weeks from June 2, 1927.

ROBIN. Habit of last. Flowering stems 30 inches, 6 fld. Flowers very close, well proportioned and stiff, of medium size; standards domed, $2\frac{1}{2} \times 1\frac{1}{2}$ inch, margins waved, bright liseran-purple; falls hanging straight down, $1\frac{1}{2} \times 1\frac{1}{2}$ inch, bright rosy-magenta with darker margins and veins; beard white, tinged coppery orange. Flowering for three weeks from May 26, 1927.

Raised by Mr. A. J. Bliss and sent by the Orpington Nursery Co.

EMBER. Habit of last. Flowering stems 40 inches, nearly straight, 8 fld. Flowers large, stiff, well proportioned; standards domed, with waved margins, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, dull pale smoky-violet on yellow; falls hanging straight, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, velvety, rich auricula-purple; beard bright orange. Flowering for three weeks from May 31, 1927.

Raised and sent by Miss Sturtevant.

Might be placed in Class VI *b*, but comes best here for garden effect, and, like the next, approaches Class IV *d*.

SHREWSBURY. Rapid of increase and vigorous, with glaucous-green foliage, 24 inches high. Flowers of medium size, stiff, well proportioned; standards domed, $2\frac{1}{2} \times 2$ inches, pale bright rosy-magenta; falls $1\frac{1}{2} \times 2$ inches, hanging straight down, rich purplish-magenta, with a very conspicuous bright rich orange beard. Flowering for over three weeks from May 30, 1927.

Raised by Mr. Farr and sent by the Orpington Nursery Co.

The following varieties falling into this class are planted with the above for future judgment:

QUEEN ELINOR (Hort).	PROSPERITY (Sturtevant).
IBFALL.	MISS POMEROY (Perry).
HARRIET PRESBY (Presby).	PRINCESS (Dykes).
SWEET LAVENDER (Bliss) (fig. 22).	HOURI (G. P. Baker).

The following varieties belonging to Class IV *c* are planted in the General Collection. A few of them have rather smoky standards, which might place them in Class VI, but as their general effect is very similar to that of the major part of Class IV *c* they are included here.

- ASTARTE; 24 inches; June.
- †AURORA; 32 inches; June.
- CONFUCIUS; 24 inches; June.
- CORDELIA; 26 inches; June.
- *DIADEM; 26 inches; May-June.
- DORMAN; May-June.

* Near Class IV *d*.

† Near Class V *c*.

DU BOIS DE MILAN; 22 inches; May-June (sent also as 'Maidstone Blue').

ERICH; 36 inches; June.

GRAND BOUQUET; 30 inches; May-June.

† GREVIN; June.

† HALO; 36 inches; June.

HELVETIA; 30 inches; May-June.

HER MAJESTY; 24 inches; June.

HIAWATHA; 26 inches; June.

HON. MRS. THOS. KINGSCOTE; 36 inches; June.

LEVERRIER; 40 inches; June.

LOUTE; 30 inches; June.

There are apparently two plants under this name, one received from Messrs. Bunyard being distinct from this, which has long been grown at Wisley.

LURLINE; 34 inches; May-June.

* MAGNATE; 26 inches; May-June.

MANSARD; 26 inches; May-June.

MARION LOAT; 24 inches; June.

MISS PAGET; 36 inches; May-June.

MRS. NANDY HOSKINS; May-June.

ROSALIND; 36 inches; June.

† RUBY; 28 inches; May-June.

SARSANDRA; 26 inches; June.

SINCERITY; 30 inches; June.

SYBIL; 20 inches; June.

TAMAR; 28 inches; May-June.

TROOST; 30 inches; May-June.

The following variety has been grown at Wisley in recent years, but is not now represented there:

EMPRESS EUGENIE (?); 24 inches; May-June.

CLASS IV *d*.

Varieties with dark red-purple standards paler than the falls.

Kharput, A.M. 1927. Vigorous, rapid of increase, with glaucous-green foliage, 20 inches high. Flowering stems 30 inches, straight, 4 fld. Flowers large, scented, well proportioned but inclined to become limp when fully open; standards domed, $3\frac{1}{2} \times 2\frac{1}{4}$ inches, hæmatoxylin-violet; falls hanging straight down, $2\frac{1}{2} \times 2$ inches, rich nigrosin-violet rather paler at the margins; beard tipped pale yellow. Flowering for three weeks from mid-May. A.M. 1916.

This variety was also in the trials under the name 'ITALIA.'

SEMINOLE. Vigorous and of rapid increase, with glaucous-green foliage, 22 inches high. Flowering stems 36 inches, erect, zigzag, 8 fld. Flowers of medium size, well proportioned, stiff; standards domed, almost circular, flat, $2\frac{1}{2}$ inches wide, magenta; falls hanging straight down, $2 \times 2\frac{1}{2}$ inches, rich auricula-purple; beard deep yellowish-orange. Flowering for three weeks from May 23, 1927.

Raised by Mr. Farr and sent by the Orpington Nursery Co.

EVADNE. Habit of last. Flowers scented; standards domed, $2\frac{1}{2} \times 2$ inches, coppery pale magenta; falls drooping, $1\frac{1}{2} \times 2$ inches, rosy-magenta with distinct veining; beard bright orange. Flowering for three weeks from May 23, 1927.

Raised by Mr. A. J. Bliss and sent by the Orpington Nursery Co.

The following varieties in this class are planted with the Standard Collection:

PEERLESS (Dykes).

PIONEER (Bliss).

CENGIALTI THALIA (Perry).

CENGIALTI KING GEORGE (Perry).

ARGUS (from Pilkington).

EMILIE (Ruys).

E. C. SHAW (Fryer).

IRIS 'DzR' (Pilkington).

M. HAUTEFEUILLE (Denis).

M. AUSTIN (Denis).

ARLINGTON (Simpson).

M. D. PERTHUIS (Millet).

FRAGRANS (Nonne & Hoepker).

KIRMAN (Baker).

ESPLENDIDO (Mohr).

The following varieties belonging to Class IV *d* are planted in the General Collection:

APHYLLA GIGANTEA; 15 inches; May.
 ARCHEVÊQUE; 26 inches; May-June.
 AURELLE; 22 inches; May-June.
 CAPOREAL; 36 inches; May-June.
 EUGENE BONVALLET; 24 inches; June.
 FLORENCE WELLS; 30 inches; June.
 GULES; 40 inches; June.
 IANTHEA; 36 inches; May-June.
 MESTOR; 36 inches; May-June.
 MRS. E. T. VIEUSSEUX; 36 inches; May-June.
 MRS. STAFFORD; 30 inches; May-June.
 ROYAL; 22 inches; May. A.M. 1914.
 RUBENS; 26 inches; June.
 R. W. WALLACE; 32 inches; June.
 TREMANDRA; 32 inches; May-June.
 TUSCANY.

Semi-dwarf Varieties.

BURGUNDY; 10 inches; April-May.
 MELPOMENE; 9 inches; April-May.
 SOCRATES; 9 inches; April-May. Sent to the trial also as 'OLBIENSIS SOCRATES' (Barr).

Dwarf Varieties.

BIFLORUS; 6 inches; April-May.
 CYANEA (also called PUMILA CYANEA); 7 inches; April-May.
 FIEBERI; 9 inches; May. A.M. 1916.
 PUMILA VIOLACEA; 7 inches; April-May.

The following varieties have been grown at Wisley in recent years, but are not now represented there:

ASSAUREZ (from Barr); 29 inches; June.
 ROSE QUEEN (Bunyard); 29 inches; June.
 VIOLET (from Bunyard); 4 inches; April-May.

CLASS V.

Irises in Class V have standards and falls of the same (or almost exactly the same) shade of blue or red-purple. The same subdivisions as in Class IV are possible, viz.:

- a. Pale blue-purple;
- b. Dark blue-purple;
- c. Pale red-purple;
- d. Dark red-purple;

and the same difficulty in drawing a hard and fast line between the sub-classes exists as in Class IV. 'Viola' has been taken as the end of the 'a' series in the following, and Class V *a* therefore includes self-coloured varieties with flowers no deeper blue-purple than in 'Viola,' while Class V *b* includes those with flowers of deeper shades.

CLASS V *a*.

Varieties with standards and falls of the same shade of pale blue-purple.

Corrida, A.M. 1927. Vigorous and of rapid increase, with glaucous-green foliage, 20 inches high. Flowering stems 34 inches, erect, 8 to 10 fid. Flowers of medium size and very well proportioned, pale lavender, slightly scented; standards arching and domed, $2\frac{1}{2} \times 1\frac{1}{2}$ inch; falls very drooping, $2 \times 1\frac{1}{2}$ inch;

beard white except at the base. Flowering for three weeks from June 1, 1927. A free and shapely variety of very clear and pleasing colour.

Raised by M. Millet and sent by Messrs. Wallace.

BLUET. Foliage 18 inches, scarcely glaucous. Flowering stems 24 inches, erect, 5 or 6 fld. Flowers crowded, small, of good form, pale lavender, the falls with a slight rosy tinge; standards domed, $2 \times 1\frac{1}{2}$ inch; falls drooping, $1\frac{1}{2} \times 1\frac{1}{2}$ inch; beard tipped yellow. Flowering for nearly a month from May 13, 1927. Near 'ZEPHYR' and 'AQUAMARINE' in colour.

Raised by Miss Sturtevant, sent by the Orpington Nursery Co.

AQUAMARINE. Foliage more glaucous than in last. Flowering stems 4 or 5 fld. Flowers crowded, of medium size, pale violet; standards $2\frac{1}{2} \times 1\frac{1}{2}$ inch; falls $1\frac{1}{2} \times 1\frac{1}{2}$ inch. Flowering for three weeks from May 17, 1927.

Raised by Mr. W. R. Dykes and sent by the Orpington Nursery Co.

ZEPHYR. Glaucous-green leaves, 20 inches high. Flowering stems straight, 30 inches high, 4 or 5 fld. Flowers small, well proportioned, soft bluish-violet, the falls with a little more red; standards somewhat domed; falls hanging straight, broad. Flowering for nearly a month from May 14, 1927.

Sent by Messrs. Barr.

MLLE. YVONNE PELLETIER. Foliage glaucous-green, 26 inches. Flowering stems 36 inches, zigzag, 8 fld. Flowers of medium size, well proportioned and stiff, pale lavender; standards domed, $2\frac{3}{4} \times 1\frac{1}{2}$ inch; falls $1\frac{1}{2} \times 1\frac{1}{2}$ inch, drooping; beard tipped yellow. Flowering for over three weeks from June 1, 1927.

Raised by M. Millet, sent by M. Cayeux (fig. 23).

PALLIDA DALMATICA. Vigorous and of rapid increase with wide glaucous foliage 22 inches high. Flowering stems 36 inches, 6 to 8 fld. Flowers scented, large, well proportioned, but inclined to flop, pale lavender-mauve, apt to fade somewhat; standards cupped, $2\frac{1}{2}$ inches broad; falls drooping, $2\frac{1}{2}$ inches broad, 2 inches long; beard tipped bright orange; one standard bearded. A.M. 1917.

A fine variety from a wild source, in the trials also under the names 'PRINCESS BEATRICE,' 'PALLIDA PRINCESS BEATRICE,' 'PALLIDA DALMATICA PRINCESS BEATRICE,' 'REV. W. WILKS.'

MOTHER OF PEARL. Vigorous and of rapid increase, with glaucous-green foliage, 22 inches high. Flowering stems 40 inches, 7 fld. Flowers large, well proportioned, scented, pale pearly lavender; standards domed, $3 \times 2\frac{1}{2}$ inches; falls hanging straight, $2\frac{1}{2}$ inches long and broad; beard bright orange yellow. Flowering for three weeks from May 30, 1927.

Raised and sent by Miss Sturtevant.

On account of its somewhat smoky tinge might find a place in Class VI, but for garden effect it belongs here.

ODORATISSIMA. Foliage broad, glaucous, 20 inches. Flowering stems 36 inches, 5 to 7 fld. Flowers well proportioned, rather large, faintly scented, lavender-violet with falls more rosy; standards arching, $2\frac{1}{2} \times 2\frac{1}{2}$ inches; falls hanging straight, $2 \times 2\frac{1}{2}$ inches; beard tipped orange. Flowering for three weeks from May 21, 1927.

In the trials also as 'PALLIDA ODORATISSIMA.'

NORMA. Foliage 20 inches. Flowering stems 36 inches, 5 or 6 fld. Flowers of medium size, well proportioned, light lavender-mauve, the falls slightly more violet; standards domed; falls drooping; beard tipped bright orange. Flowering for three weeks from May 23, 1927.

Raised and sent by Mr. Perry.

MLLE. SCHWARTZ. Foliage nearly green, 20 inches. Flowering stems 38 inches, 6 or 7 fld. Flowers of medium size, well proportioned, rather wrinkled, pale lavender-mauve; standards domed; falls hanging straight; beard tipped yellow. Flowering for three weeks from May 30, 1927.

Raised by M. Denis, and sent by Mr. G. P. Baker.

PALLIDA KULAN TITH. Foliage glaucous, stature, etc., as in last. Flowers of medium size, well proportioned, pale bluish-lavender, smooth; standards somewhat domed; falls drooping; beard tipped orange. Flowering for a month from May 14, 1927.

Raised and sent by Mr. A. Perry.

LADY CHARLES ALLOM. Foliage glaucous, 22 inches. Flowering stems 34 inches. Flowers of medium size but floppy, well proportioned, lavender-violet; standards cupped, $2\frac{1}{2} \times 2\frac{1}{2}$ inches; falls hanging straight; beard white, tipped yellow. Flowering for three weeks from May 18, 1927.

Raised and sent by Mr. A. Perry.

BENBOW. Vigorous but of rather slow increase, foliage glaucous, 16 inches. Flowering stems 30 inches, zigzag, 5 fld. Flowers of medium size, rich lavender-

blue; well proportioned, stiff; standards domed; falls sigmoid; beard tipped lemon. Flowering for three weeks from May 28, 1927. A.M. 1916.

Raised by Mr. Bliss.

Several varieties approach very closely in colour to 'BENBOW' (which tucks the falls in too much for an ideal form), e.g. 'MRS. TINLEY' (in Class IV a), 'VIOLA,' 'EDEN PHILPOTTS,' 'KATE HAYTER REED,' 'LADY CHARLES ALLOM,' 'LA BEAUTÉ,' 'COMMODORE,' 'ZEPHYR,' 'LEONE TRENANCE' (in Class IV a), and this and 'VIOLA' come very close to Class V b.

VIKING. Vigorous and of rapid increase, with glaucous foliage, 20 inches high. Flowering stems 30 inches, nearly straight, 7 fld. Flowers stiff and well proportioned, of medium size, rich lavender-blue; standards almost round, domed; falls hanging straight down; beard white, tipped lemon. Flowering for three weeks from May 23, 1927.

Raised by Mr. A. J. Bliss and sent by the Orpington Nurseries.

SIRENE. Vigorous and of rapid increase; foliage glaucous, 24 inches. Flowering stems 32 inches, 8 fld. Flowers well proportioned, of medium size, lavender-violet, standards faintly smoky; standards domed; falls drooping; beard tipped orange. Flowering for three weeks from June 1, 1927.

Raised and sent by Messrs. Perry.

VIOLA. Vigorous, rapid of increase, with nearly green foliage, 20 inches high. Flowering stems 28 inches, nearly straight, 7 fld. Flowers of medium size, well proportioned, rich lavender-violet; standards domed; falls very drooping; beard tipped orange. Flowering for three weeks from May 23, 1927.

Raised by Sir Michael Foster and sent by Messrs. Wallace.

The following varieties belonging to Class V a are planted with the Standard Collection for future judgment:

PALLIDA SHELDRAKE (Perry).	LADY LOU (Dean).
AVALON (Sturtevant).	REALM (Baker).
PORCELAIN (Foster).	FLORENCE (Vilmorin).
LOUIS TROWBRIDGE (Farr).	M. MASSE (Cayeux ?).
HORIZON (Morrison).	GLOIRE DE HILLEGOM (Ruys).
ARIEL (Murrell).	PALLIDA SHOTSHAM var. (Orpington ?).
CHARMIAN (Dykes).	SANTA BARBARA (Mohr).

The following tall varieties belonging to Class V a are planted in the General Collection:

ARGONAUT; 36 inches; June.
 AUSTRALIS; 24 inches; May-June. A.M. 1896.
 AZURE; 34 inches; May-June.
 BELLADONNA; 36 inches; May-June.
 CARTHORIS; June.
 CELESTE; 32 inches; May-June. Also in trials as 'PALLIDA CELESTE.'
 CELIA; 30 inches; May-June.
 CHESTER J. HUNT; 30 inches; June.
 CLEMATIS; 26 inches; June.
 CLUNY; 22 inches; May-June.
 COMMODORE; 28 inches; May-June.
 COMTE HORACE DE PARIS; 26 inches; May-June.
 DAISY HILL; 36 inches; May-June.
 DELICATA; 28 inches; June.
 DRAKE; 30 inches; May-June.
 DUCHESS OF YORK.
 EDEN PHILPOTTS; 32 inches; May-June.
 FREDERICK; 28 inches; June.
 HERA; June.
 HUSSARD; 30 inches; May-June.
 IDEAL; June.
 ISOLA; 30 inches; June.
 ISSUS; 30 inches; May-June.
 KATE HAYTER REED; 32 inches; May-June.
 LA BEAUTÉ; 22 inches; May-June.
 LACHESIS; 18 inches; May.
 LANCELOT; 36 inches; June.
 LAVENDER; 36 inches; May-June.
 MARJORIE TINLEY; 40 inches; June.

*MEIMUNG; 24 inches; May-June (also sent in as 'Silver Mist').
 MIRANDA; 36 inches; June.
 MIST; 30 inches; May-June.
 MRS. CHAS. PEARSON; 36 inches; June (near Class V c).
 MONA; 18 inches; May-June.
 M. TRININAD; June.
 MYTH; 20 inches; May-June.
 ODESUS; 40 inches; May-June.
 PALLAS; 24 inches; May.
 PALLIDA; 36 inches; May-June.
 PALLIDA AUREA VARIEGATA; June.
 PALLIDA COMO; 40 inches; May-June (near Class IV a and IV b).
 PALLIDA MINOR; 14 inches; June.
 PALLIDA NANA; 18 inches; May-June.
 PALLIDA TINEAE; 30 inches; May-June.
 PALLIDA VARIEGATA; June.
 PETER HANSON; 38 inches; May-June.
 PULCHERRIMA; 28 inches; May-June.
 PYRRHA; 38 inches; June.
 QUEEN CATERINA; 30 inches; June.
 RACEMOSA; 36 inches; May-June.
 RODNEY; 36 inches; June.
 SCHOOL GIRL; 36 inches; May-June.
 SEA NYMPH; 26 inches; June.
 SUFFREN; 34 inches; June.
 TARSUS VAR. CYPRIANA.
 TARTARIN; June.
 TROJANA PALLIDA; 34 inches; June.
 UMBRO; 30 inches; June.
 VEGLIA; 24 inches; May.
 VIOLACEA GRANDIFLORA; 30 inches; June.
 WAYLAND COWLEY; June.
 WEDGWOOD; 28 inches; May-June.
 ZILIA; 38 inches; May-June.

The following varieties have been grown at Wisley in recent years, but are not now represented there:

LUCY; 27 inches; May-June.
 MARMORA; 28 inches; June.
 VIOLET QUEEN (from Bunyard); 25 inches; May-June.

Dwarf Variety.

AZUREA, H.C. 1927. Of rapid increase with green foliage 5 inches high. Flowering stems 6 inches, 1 fld. Flowers small, pale Cambridge blue, well proportioned; standards domed, $1\frac{1}{2} \times \frac{1}{2}$ inch; falls drooping. Flowering for three weeks from April 10, 1927.

Sent by Messrs. Waterer & Crisp and by the Orpington Nursery Co.

CLASS V b.

Self-coloured varieties with deep blue-purple flowers.

Tall Varieties.

PENGE. Vigorous and of rapid increase, with glaucous foliage 20 inches high. Flowering stems 36 inches, zigzag, with 8 or 9 flowers very closely set. Flowers of medium size, well proportioned and stiff, rich bluish-violet; standards $2 \times 1\frac{1}{2}$ inch, domed; falls drooping, $1\frac{1}{2} \times 1\frac{1}{2}$ inch; beard white, tipped dirty orange. Flowering for nearly a month from May 18, 1927.

GLADYS ROBERTS. Habit of last, but foliage green, and flower stems 28 inches, with 7 very closely set flowers. Flowers manganese-violet; standards slightly domed, $2\frac{1}{2} \times 2\frac{1}{2}$ inches; falls hanging straight down, $1\frac{1}{2} \times 2\frac{1}{2}$ inches; beard white, tipped bright orange. Flowering for three weeks from May 17, 1927.

Raised and sent by Mr. Perry.

* Curious on account of its bright green foliage, unusual in blue-purple bearded Irises. Remains long in flower.

BLUE BOY. Rapid of increase, with foliage 15 inches high. Stem, 3 fld. Flowers of medium size, litho-purple; standards cupped, $2\frac{1}{2} \times 1\frac{1}{2}$ inch, falls incurved, 2 inches long and broad; beard tinged blue at base, tipped dirty yellow. Flowering for a fortnight from May 10, 1927.

Raised by Sir Michael Foster.

HARMONY. Vigorous and rapid of increase, the slightly glaucous foliage 18 inches high. Flowering stems 22 inches, straight, with 5 or 6 crowded flowers. Flowers of medium size, well proportioned, deep rich violet-blue; standards cupped, $2\frac{1}{2} \times 1\frac{1}{2}$ inch; falls hanging straight down, 2 inches deep and wide; beard blue, tipped orange. Flowering for three weeks from May 21, 1927.

Raised by Mr. Dykes and sent by the Orpington Nursery Co.

PARC DE NEULLY. Habit of last, but foliage 22 inches and flowering stems 32 inches high, and with six more widely spaced flowers. Flowers larger, scented, well proportioned and stiff, pleroma-violet; standards cupped, $2\frac{1}{2} \times 2\frac{1}{2}$ inches; falls hanging straight down, $2 \times 2\frac{1}{2}$ inches; beard white, tipped yellow. Flowering for almost three weeks from May 23, 1927.

Raised by M. Verdier and sent by Messrs. Barr.

The following varieties are planted with the Standard Collection for future judgment:

VENETIA (Dykes).	RAJPUT (Sturtevant).
OPORTO (Yeld).	BENONI (Perry).
PURPLE LACE (Sturtevant).	GOLDCREST (Dykes). A.M. 1914.
SAPPHIRE (Dykes).	PEDRO (Dykes).
CYMBELINE (Dykes).	ARSACE (Millet).
ISIS (Bliss).	MYDDELTON BLUE (Bowles).
OCTAVIA (Dykes).	MRS. ILLIS (Fryer).

The following deep blue-purple self-coloured Irises (Class V b) are planted in the General Collection:

BLUE BIRD; 36 inches; May-June.
 CENGIALTI; 19 inches; May.
 CENGIALTI LOPPIO; 22 inches; June.
 CRÉPUSCULE; 24 inches; May-June.
 JAMES HUNTER; May-June.
 MISS JESSOP; 26 inches; May-June.
 PALLIDA MONTE BRIONE; 20 inches; May-June.
 TRINCULO; 32 inches; May-June.

Semi-dwarf Variety.

TOMTIT; 14 inches; June.

The following variety has been grown in recent years at Wisley, but is not now represented there:

OSIRIS (from Barr); 14 inches; May.

CLASS V c.

Self-coloured varieties with falls and standards pale red-purple.

This class contains the "pink" Irises and is rapidly increasing in size, but there is room for really first-class varieties in it still. No dwarf varieties appear in this class.

ELINOR BLOSSOM. Vigorous and rapid of increase, with glaucous-green foliage, 16 inches high, the flower stems scarcely taller, with 3 or 4 close-set flowers. Flowers of medium size and good form, pale mallow-pink, the falls being white in the middle; standards domed, $2\frac{1}{2} \times 1\frac{1}{2}$ inch; falls, $1\frac{1}{2} \times 1\frac{1}{2}$ inch; beard white, tipped bright orange. Flowering for over three weeks from May 17, 1927.

Raised by Miss Sturtevant and sent by Messrs. Waterer & Crisp.

POWHATAN. Vigorous and of good increase, with glaucous foliage 24 inches high; flowering stems, zigzag, 36 inches, 6 fld.; flowers of medium size, well proportioned, stiff, bright amparo-purple; standards domed, $2\frac{1}{2} \times 1\frac{1}{2}$ inch; falls somewhat drooping, $1\frac{1}{2} \times 1\frac{1}{2}$ inch; beard tipped by orange. Flowering for about three weeks from May 31, 1927.

Raised by Mr. Farr and sent by Messrs. Barr.

The following pale red-purple varieties are planted with the Standard Collection for future judgment :

MAIDEN'S BLUSH (Perry).	BATULUS (Perry).
WYNDHAM (Farr).	BERNARD GALLOWAY (Perry).
WILD ROSE (Sturtevant).	FÜRSTIN LONYAY (Goos & Koenemann).
APHRODITE (Dykes).	BRIONENSIS.
MRS. MARION CRAN (Perry).	CAROLINE E. STRINGER (Sass).
FRANKLIN BEYNON (Perry).	

The following varieties planted in the General Collection belong to Class V c :

BARBARA ; 30 inches ; June.
 CHATELLET.
 CHERUBIM ; 24 inches ; May-June.
 CRIMSON GLOW ; 32 inches ; May-June.
 DELICATISSIMA ; 30 inches ; June.
 DREAM ; 36 inches ; June.
 GEORGIA ; 28 inches ; May-June
 GRAY MORN ; 24 inches ; May-June.
 KATHLEEN ; 26 inches ; June.
 LADY BYNG ; 36 inches ; June.
 LOHENGRIN ; 30 inches ; May-June. A.M. 1915, 1916.
 LUNA ; 40 inches ; May-June.
 MARGARET MOOR ; 26 inches ; June.
 MIRAGE ; 30 inches ; June.
 MRS. ALAN GRAY ; 28 inches ; May-June.
 M. AYMARD ; 20 inches ; June.
 NANCE ; 30 inches ; May-June.
 PALLIDA Wm. MARSHALL ; 38 inches ; June.
 PURPLE AND GOLD ; 20 inches ; May-June.
 QUEEN OF MAY ; 26 inches ; May-June. A.M. 1891.
 QUINDA ; 24 inches ; May-June.
 ROSABELLE ; 20 inches ; June.
 RUBY PERRY ; 36 inches ; June.
 SALENSIS ; 36 inches ; May-June.
 STANDARD BEARER ; 36 inches ; June.
 SUSAN BLISS ; 36 inches ; June.
 TITUS ; 36 inches ; May-June.

CLASS V d.

Varieties with deep red-purple self-coloured flowers.

Tall Varieties.

This is a comparatively small class at present, but contains some striking and excellent varieties.

Kurdistan, A.M. 1927. Vigorous and of rapid increase, with green foliage 15 inches high. Flowering stems 18 inches, 2 fld. Flowers of medium size and good form : rich deep petunia-violet, the falls being rather darker in the middle ; standards cupped, $2\frac{1}{2} \times 1\frac{1}{2}$ inch ; falls drooping, $1\frac{1}{2} \times 1\frac{1}{2}$ inch ; beard tipped bright orange. Flowering for three weeks from May 11, 1927.

Raised by Mr. Dykes, sent by Messrs. Wallace.

Kochii, A.M. Foliage more glaucous than last, flowering stems 28 inches, 4 fld. Flowers well proportioned, stiff, of medium size, bright deep violet-purple ; standards domed, $2\frac{1}{2} \times 2$ inches ; falls hanging straight down, $1\frac{1}{2} \times 1\frac{1}{2}$ inch ; beard tipped orange. Flowering period the same as 'Kurdistan.' A.M. 1916.

Grown for many years at Wisley from various sources and given A.M.

ATROPURPUREA. Foliage rather yellower than in 'Kochii.' Flowering stem 24 inches, straight, 3 or 4 fld. Flowers medium large, of good form, rather brighter deep violet-purple than the last ; standards somewhat cupped, $2\frac{1}{2} \times 1\frac{1}{2}$ inch ; falls hanging straight, $1\frac{1}{2} \times 1\frac{1}{2}$ inch ; beard bluish-white, tipped yellow. Flowering for nearly a month from May 11, 1927.

Sent by Mr. G. P. Baker.

Very closely similar to this are 'DUCHESSE DU CHATEAUFORT,' from Messrs. Barr ; and 'ASIATICA,' originally from Messrs. Bunyard, long grown at Wisley ; while 'CRIMSON KING,' 'GERMANICA CRIMSON KING' (from Messrs. Barr), 'EREBE,'

and 'TRAUTLIEB' were indistinguishable from it, or almost so, though the last name is apparently used at times for 'PURPLE KING.'

Planted with the Standard Collection in this class are the following varieties for future judgment

CENGIALTI THE CZAR (Perry).
CENGIALTI PERRY'S FAVOURITE (Perry).
PALLIDA OCTAVIUS (Perry).

The following varieties in Class V *d* are planted in the General Collection :

BENACENSIS ; 20 inches ; May.
CAPRICE ; 24 inches ; June.
EDOUARD MICHEL ; 30 inches ; June. A.M. 1909.
GNOME ; May-June.
INGRES ; 32 inches ; June.
MADAME PACQUITTE ; 24 inches ; June.
MARSOUIN ; 20 inches ; June.
PAULINE ; June.
*PURPLE KING ; 24 inches ; May-June.

Semi-dwarf Varieties.

Mars, A.M. 1927. Vigorous and of rapid increase, with green foliage 14 inches high. Flowering stems 14 inches only, with three flowers very closely set. Flowers of medium size, well proportioned, stiff, pale Bishop's purple ; standards conical, $2 \times 1\frac{1}{2}$ inch ; falls drooping, $1\frac{1}{2} \times 1\frac{1}{2}$ inch ; beard white, tipped pale blue. Remarkable in the purple flecking of the spathe-valves. Flowering for three weeks from May 10, 1927.

This has been grown at Wisley (from Messrs. Barr's stock) under the name 'Dora' for some years.

The present stock came from Mr. A. Perry in 1925.

NUDICAULIS PURPUREA ; 10 inches ; May.
PYRAMUS ; 11 inches ; May.
TIFLIS ; 14 inches ; April-May.

The following varieties have been grown at Wisley in recent years, but are not now represented there :

ARC-EN-CIEL (from Barr) ; 30 inches ; May.
KING OF BLUES ; 5 inches ; April-May.
RUBERISSIMA ; 42 inches ; June.
VICTOR SEMAINE (Guildford H. P. Nursery) ; 14 inches ; May.
VIVIEEN (Barr) ; 7 inches ; May.

CLASS VI.

Varieties with standards of shot shades, that is, of any shade due to a mixture of two colours of which one is always yellow, the yellow being always evident at the base of the standards.

The subdivisions of the class are according to the predominance or otherwise of the yellow.

a. Yellow scarcely perceptible.

- (1) Pale blue or lavender.
- (2) Rose or pale pink.

b. Bronze.

c. Yellow obvious.

- (1) Purple predominating.
- (2) Yellow predominating.

* Apt to be cut by frost.

A few varieties which might, on account of a small amount of yellow at the base of the standards, be sought here have been placed in other classes better suiting their garden effect.

CLASS VI *a* (1).

Varieties with standards of shot shades, pale blue or lavender, the yellow being scarcely perceptible.

GERALDINE. Vigorous and of rapid increase, with glaucous foliage, 24 inches high. Flowering stems 32 inches, zigzag, 8 fld. Flowers of medium size, stiff, well proportioned, scented; standards domed, $2\frac{1}{2} \times 2$ inches, creamy-white flushed lavender towards the tip; falls hanging straight, $1\frac{1}{2} \times 1\frac{1}{2}$ inch, pale lavender-violet; beard very conspicuous, bright orange. Flowering for three weeks from June 2, 1927.

Raised by Mr. G. Yeld and sent by Messrs. Wallace.

HEMODUS. Habit of last, but flowering stems 36 inches. Flowers medium large, of good proportions, stiff, scented; standards domed, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, deep smoky lavender-violet; falls drooping, $2 \times 2\frac{1}{2}$ inches, deep lavender-violet; beard white, tipped orange. Flowering for three weeks from May 30, 1927.

A variety which might be put into Class V *a* for garden effect, raised and sent by Mr. Perry.

PALEMON. Rather slow of increase, otherwise of habit of last. Flowers large, well spaced and proportioned, stiff; standards domed, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, margins recurved, dull smoky lavender on a cream ground; falls drooping, $2 \times 2\frac{1}{2}$ inches, dull smoky lavender-lilac, margins much paler; beard cream, tipped orange. Flowering for about three weeks from June 1, 1927.

Raised and sent by Mr. A. Perry.

RUTH. Vigorous and of rapid increase, with glaucous foliage, 20 inches high. Flowering stem 28 inches high, straight, 4 or 5 fld. Flowers well proportioned, stiff, large, faintly scented; standards domed, $2\frac{1}{2} \times 2$ inches, pale lavender suffused with smoky yellow; falls hanging straight, $2 \times 1\frac{1}{2}$ inch, bright pale lavender suffused smoky yellow; beard yellow. Flowering for three weeks from May 30, 1927.

Raised by Mr. Yeld and sent by Mr. Pilkington.

The following varieties are planted in this class in the Standard Collection for future judgment:

QUAKER LADY (Farr).

CASSIOPÉE (Vilmorin).

NEMORALIA (Perry), with the garden effect of Class V *a*.

HARPALION (Perry).

JORDAENS (Nonne & Hoepker).

OLIVE MURRELL (Perry).

The following varieties belonging to Class VI *a* (1) are planted in the General Collection:

ASIA; 36 inches; June. (A magnificent Iris with, alas! weak stems.)
A M. 1916.

DALMARIUS; 26 inches; June.

DEMI-DEUIL; 26 inches; June.

E. E. ADAMS; 30 inches; June.

EMPRESS VICTORIA; 24 inches; June.

FAY; 30 inches; May-June.

HUGH MILLER; 24 inches; May-June.

LE VESUVE; 20 inches; June.

MADY CARRIÈRE; 36 inches; June.

MRS. HUBERT; 36 inches; June.

NIRVANA; 40 inches; June.

NOTHUNG; 30 inches; June.

PALAUREA; 30 inches; May-June.

QUEEN ALEXANDRA; 30 inches; June.

REGGIE; 28 inches; June.

RUBELLA; 20 inches; May-June.

SINDJKHAT; 36 inches; June.

SUZON; 30 inches; June.

ULYSSES.

The following varieties have been grown at Wisley in recent years, but are not now represented there :

ABDUL AZIZ, from Messrs. Barr.
 LAVANDULACRA ; 32 inches ; May-June.
 LORD ROSSE (from Barr) ; 25 inches ; June.
 LORD SALISBURY (from Barr) ; 34 inches ; June.
 MME. DENIS (Denis) ; 33 inches ; June.
 MAROON (from Bunyard) ; 34 inches ; June.
 THE MOOR ; 24 inches ; June.

CLASS VI a (2).

Varieties with standards of shot shades, rose or pale pink, the yellow being scarcely perceptible.

Mary Gibson, A.M. 1927. Vigorous and of rapid increase, with glaucous foliage, 24 inches. Flowering stems nearly straight, 38 inches, 8 fld. Flowers well proportioned, stiff, of medium size, scented ; standards somewhat arching, $2\frac{1}{2} \times 1\frac{1}{2}$ inch, liseran-purple on yellow, giving a buff effect ; falls hanging straight down, $1\frac{1}{2} \times 2$ inches, liseran-purple with margins suffused with yellow ; beard bright orange. Flowering for three weeks from May 23, 1927.

Raised and sent by Mr. Perry.

MRS. W. CUTHBERTSON. Flowering stems 32 inches, erect, 8 fld. Flowers well proportioned, stiff, medium large, standards domed, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, smoky mauve on a cream ground ; falls very drooping, $1\frac{1}{2}$ inch long and wide, rather velvety, rich petunia-violet. Flowering for three weeks from May 21, 1927.

Raised and sent by Mr. Perry.

SARABANDE. Foliage 22 inches ; flowering stems 20 inches high, 8 fld. Flowers very closely set, of medium size and good form ; standards $2\frac{1}{2} \times 1\frac{1}{2}$ inch, faint pinkish-lilac on cream ; falls drooping, 3 inches long and wide, rather velvety, auricula-pink. Flowering for three weeks from June 2, 1927.

Raised by Miss Sturtevant and sent by Messrs. Wallace.

The following varieties have been planted with the Standard Collection in this class for future judgment :

ISOLINE (Vilmorin) (fig. 24).	RAMONA (Mohr).
A M 1910, 1916.	GEORGE YELD (Perry).
LONA (Sturtevant).	JENNETTE DEAN (Sturtevant).
MADAME CHERI (Sturtevant).	MONSIEUR BRUN (Denis).

The following varieties planted in the General Collection belong to this class :

DEJAZET ; June.
 DELIA ; 30 inches ; May-June.
 DEUCALION ; 36 inches ; June.
 HERMIA ; 18 inches ; June.
 LA ESMERALDA ; 24 inches ; June.
 LADY JANE ; 30 inches ; June.
 MADAME JANIAUD ; 32 inches ; May-June.
 MOUNT PENN ; 28 inches ; May-June.
 MUZERIS ; May-June.
 NANCY ORNE ; 38 inches ; June.
 PARACINA ; 28 inches ; June.
 PLUMERI ; 24 inches ; June.
 FORSENNA ; 28 inches ; May-June.
 RHODA ; 36 inches ; June.
 ROSY DAWN ; 24 inches ; May-June.
 SYPHAX ; 20 inches ; June.
 TURCO ; 32 inches ; June.

The following variety in this class has been grown at Wisley in recent years but is not now represented there :

NUËE D'ORAGE (from Barr) ; 36 inches ; June.

CLASS VI *b*.

Varieties with bronze standards.

As in the other subdivisions of this class it is very difficult to find a sharp line of demarcation between the varieties preceding and those following this, but the typical plant for colour of standards may be taken as 'ALCAZAR,' and the others included here are more or less grouped around it. The subdivisions are on their borders, however, purely arbitrary.

Cardinal, A.M. 1927. Of moderate vigour, with nearly green 18-inch foliage. Flowering stems 24 inches, 5 or 6 fld. Flowers closely set, of medium size, faintly scented; standards domed, $2\frac{3}{4} \times 2\frac{1}{4}$ inches, bronzy light amparo-purple with darker edges; falls hanging straight, $1\frac{1}{2} \times 2$ inches wide, very velvety raisin-purple, with a white beard tipped orange. Flowering for three weeks from May 23, 1927.

Raised by Mr. Bliss and sent by Messrs. Wallace.

Billia, A.M. 1927. Vigorous and of rapid increase. Flowers large, well proportioned, but apt to become a little floppy; standards cupped, $2\frac{3}{4} \times 2\frac{1}{4}$ inches, light lavender-violet with a smoky tinge; falls hanging straight, with margins curling back and finally meeting behind, $2\frac{1}{2} \times 2\frac{1}{4}$ inches, bright petunia-violet with darker centre. Flowering for three weeks from May 21, 1927.

Raised and sent by Mr. A. Perry.

Alcazar, A.M. 1927. Vigorous and of rapid increase, with glaucous foliage 24 inches high. Flowering stems 32 inches, erect, 8 fld. Flowers well proportioned, stiff, large, scented; standards cupped, $2\frac{3}{4} \times 2\frac{1}{4}$ inches, smoky light mauve; falls hanging straight down, velvety petunia-violet, beard tinged bright orange. Flowering for three weeks from May 18, 1927. F.C.C. 1916.

Raised by Messrs. Vilmorin.

The following varieties are planted with the foregoing for future judgment

MESA (Baker).	CRETONNE (Bliss).
WARRIOR (Sturtevant).	TWILIGHT (Dykes).
MOLIERE (Vilmorin).	J. NORMAN (Bowles).
ISHTAR (Sturtevant).	

Other varieties in Class VI *b* planted in the General Collection are the following:

ACHATES; 30 inches; May-June.
CANOPUS; 36 inches; May-June.
DIDO; 26 inches; June.
J. C. WELD; 36 inches; June (fig. 25).
MRS. HETTY MATSON; 36 inches; May-June.

The following variety in this class has been grown at Wisley in recent years, but is not now represented there:

W. ROBINS (Perry); 30 inches; June.

CLASS VI *c* (1).

Varieties with standards in which yellow is obvious, purple predominating.

Troades, A.M. 1927. Vigorous, of rapid increase, with glaucous foliage, 24 inches high. Flowering stems 36 inches, 8 to 10 fld. Flowers of medium size, well proportioned and stiff; standards domed, $2\frac{1}{2} \times 1\frac{1}{2}$ inch, dull smoky carmine on a yellow ground; falls very drooping, with rich dahlia-carmine blades, somewhat paler at the margin, $1\frac{1}{2} \times 1\frac{1}{2}$ inch; beard tipped yellow. Flowering for three weeks from May 30, 1927.

Raised and sent by Mr. A. Perry.

Prosper Laugler, A.M. 1927. Habit of last, but flowering stems 30 inches and flowers rather larger; standards cupped, with recurved margins, $2\frac{1}{2} \times 2\frac{1}{4}$ inches, pale bronzy-carmine on a yellow ground; falls hanging straight down $1\frac{1}{2} \times 2$ inches, rich velvety crimson-maroon; beard tinged yellow. Flowering for three weeks from May 30, 1927. A.M. 1916.

Raised by M. Verdier and sent by Messrs. Barr.

Ambassadeur, A.M. 1927. Foliage 26 inches, flowering stems 38 inches high. Flowers large, well proportioned and stiff; standards domed, $2\frac{3}{4} \times 2\frac{1}{2}$ inches, dull, smoky mallow-pink; falls drooping, $2 \times 2\frac{1}{4}$ inches, rich velvety

crimson-maroon; beard white except for tinge of brownish-orange in upper half. Flowering for three weeks from June 2, 1927. A.M. 1921.

Raised and sent by Messrs. Vilmorin. Introduced 1920.

ABENDA. Vigorous, rapid of increase, foliage glaucous, 24 inches high. Flowering stems 36 inches, 6 fld. Flowers of medium size, well proportioned and stiff; standards arching, $2\frac{1}{2} \times 1\frac{1}{2}$ inch, dull smoky carmine on a yellow ground; falls drooping, blades $1\frac{1}{2} \times 2$ inches, rich velvety auricula-purple; beard tipped orange. Flowering for three weeks from May 30, 1927.

OLYMPUS. Much like the last in habit and colour, but flowers larger and rather inclined to become floppy, and falls paler at margins. Season like 'Abenda.'

Raised and sent by Mr. Perry.

DUSKY MAID. Foliage 24 inches, flowering stems 26 inches high with 8 closely set flowers of medium size; standards domed, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, smoky pinkish-lilac on cream; falls very drooping, $1\frac{1}{2} \times 2\frac{1}{2}$ inches, dull velvety Indian lake with darker veining. Flowering for three weeks from May 30, 1927.

Raised by Mr. Bliss and sent by Messrs. Wallace.

COL. CANDELOT. Foliage 22 inches, flowering stems 34 inches high, with 8 to 10 well-proportioned, stiff flowers of medium size; standards cupped, $2\frac{1}{2} \times 1\frac{1}{2}$ inches, pale, dull, smoky magenta on a cream ground; falls drooping, with rich velvety Bordeaux blades, $1\frac{1}{2} \times 1\frac{1}{2}$ inch; beard white, tipped bronze. Flowering for three weeks from June 1, 1927.

Raised by M. Millet and sent by Messrs. Wallace.

BRUNO. Foliage 28 inches, flowering stems 32 inches, 8 to 10 fld. Flowers large, well proportioned, but rather floppy, scented; standards domed, $3 \times 2\frac{1}{2}$ inches, bronzy pale violet on a cream ground; falls $2\frac{1}{2} \times 2\frac{1}{2}$ inches, drooping, rich velvety purplish-crimson with pale edges; beard tipped orange. Flowering for three weeks from June 3, 1927.

Raised by Mr. A. J. Bliss and sent by Messrs. Wallace.

The following varieties belonging to this section have been planted with the foregoing for future judgment:

LORD LAMBOURNE (Perry).	LURIDA (Wild form).
ROSE MADDER (Sturtevant).	CAYLUS (Vilmorin).
REVERIE (Sturtevant).	LE CORRÈGE (Vilmorin).
DR. BLESS (Millet).	ILSAN (Goos & Koenemann).
SEEDLING G.L.P. 2 (Pilkington).	STEEPWAY (Scott).
GERVEZ (Denis).	NAOMI (Sturtevant).
SIKH (Baker).	ALLIES (Vilmorin).
NERO (Perry).	MONSIEUR BOYER (Denis).
MEDRANO (Vilmorin).	OPERA (Vilmorin).
FRYER'S GLORY (Fryer).	

The following varieties in Class VI c (1) are planted in the General Collection:

AFGHAN PRINCE; 30 inches; June.
 AMBIGU; 24 inches; May-June.
 ARNOLDS; 28 inches; June.
 BEATRICE; 26 inches; June.
 BELISSAIRE; 34 inches; June.
 DEUIL DE VALÉRY MAYET; 32 inches; May-June.
 ELDORADO; 26 inches; June. A.M. 1910.
 FAUST; 32 inches; June.
 GENERAL DE WITTE; 28 inches; June.
 JACQUINIANA; 30 inches; June. Grown also as JACQUESIANA.
 LADY HILLINGDON; 30 inches; June.
 LAVENGRO; 22 inches; June.
 MEPHISTOPHELES; 36 inches; June.
 MOZART; 28 inches; May-June.
 MRS. COWLEY; 28 inches; June.
 PEAU ROUGE; 22 inches; May-June.
 RED CLOUD; 26 inches; June.
 SAMBUCINA; 30 inches; June.
 SAMNITE; 30 inches; May-June.
 SYLPHIDE; 30 inches; June.
 TELIMUS; 36 inches; May-June.
 VAN GREUTH; 36 inches; June.

The following varieties have been grown at Wisley in recent years, but are not now represented there :

AMELIA (from Barr) ; 31 inches ; June.
 HOWII (from Forbes) ; 36 inches ; June. Much like 'Van Geertii.'
 SALAR JUNG ; 19 inches ; June.
 THE PRESIDENT (from Barr) ; 26 inches ; June.

CLASS VI c (2).

Varieties with purple and yellow shaded standards, the yellow predominating.

MADAME CHABAUT. Vigorous and rapid of increase, with glaucous foliage 22 inches high. Flowering stems 30 inches, 6 to 8 fld. Flowers well proportioned, of medium size ; standards domed, $2\frac{1}{2} \times 2$ inches, pale alizarine-pink on cream ; falls creamy-white, the margins sparsely veined pale alizarine-pink, $1\frac{1}{2}$ inch long and wide, hanging straight. Flowering for nearly a month from May 28, 1927.

This variety might be regarded as coming into Class II, but is perhaps best accommodated here.

Raised by M. Denis and sent by Messrs. Wallace.

ZWANENBURG. Vigorous and rapid of increase. Flowers badly proportioned and floppy, of medium size ; standards domed, $2\frac{1}{2} \times 1\frac{1}{2}$ inch, dirty creamy-white, irregularly blotched pale bluish-purple ; falls drooping, $1\frac{1}{2}$ inch wide and long, old gold shaded bronze, with bronzy-purple veining. Flowering for three weeks from May 4, 1927.

A difficult Iris to class.

Raised by M. Denis and sent by Mr. Pilkington.

IRIS KING. Vigorous and rapid of increase, with glaucous foliage 26 inches high, and 6 fld. stems of the same height. Flowers very closely set, medium large, stiff, well proportioned ; standards domed, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, dull mustard-yellow ; falls very drooping, 2 inches long and wide, velvety rich reddish-brown with bright orange beard. Flowering for over three weeks from June 1, 1927.

Sometimes called KING OF IRIS. The result of crossing 'I. pallida dalmatica' with 'Maori King.' Raised by Messrs. Goos & Koenemann and received from Messrs. Barr and Perry. A.M. 1916.

MRS. H. F. BOWLES. Flowering stems 40 inches tall, 7 fld. Flowers well proportioned, stiff, medium large ; standards domed, $2\frac{1}{2} \times 2\frac{1}{2}$ inches, smoky old gold faintly suffused carmine ; falls $1\frac{1}{2} \times 2\frac{1}{2}$ inches, hanging straight down, velvety, rich brownish-crimson with creamy-brown margins ; beard tipped orange. Flowering for three weeks from May 23, 1927.

Raised and sent by Mr. A. Perry.

The following varieties are growing with the foregoing for future judgment :

SUNSET (Denis).	AUBURN (Bliss).
IRIS SEEDLING 218 (Cayeux).	MENETRIER (Denis).
TECUMSETTE (Farr).	GLAMOUR (Bliss).
TANCRED (Sturtevant).	FRA ANGELICO (Vilmorin).
BELLE CHÂTELAINE (Kent & Brydon).	MME. DURAND (Denis).

The following varieties in Class VI c (2) are planted in the General Collection :

A. F. BARRON ; 24 inches ; June.
 AFTERGLOW ; 36 inches ; June.
 BERCHTA ; 24 inches ; June.
 BRONZE BEAUTY ; 24 inches ; June.
 DR. BERNICE ; 30 inches ; June.
 DORA LONGDEN ; 24 inches ; June.
 DUSKY PRINCE ; 24 inches ; June.
 ELIZABETH ; 26 inches ; June.
 EXQUISITE ; 30 inches ; June.
 FEDORA ; 28 inches ; June.
 GOLIATH ; 24 inches ; June.
 HUGH BOCH ; 30 inches ; June.
 LA PRESTIGEUSE ; 30 inches ; June.
 MADAME BLANCHE PION ; 26 inches ; May-June.
 MADAME BOULET ; 24 inches ; June.
 MARY GARDEN ; 22 inches ; June.
 MR. CHABEN ; 28 inches ; June.
 MURAT ; 24 inches ; June.

NIBELUNGEN; 28 inches; June. A.M. 1912, 1916.
 OSSIAN; 24 inches; June. A.M. 1912.
 RAJAH; 32 inches; June.
 ROMANY; 24 inches; June.
 SHIRLEY; 22 inches; June.
 SUDAN; 30 inches; June.
 TANGIERS; 22 inches; June.
 TRIANON; 26 inches; June.
 VANESSA; 30 inches; June.
 VICTOR HUGO; 30 inches; June.
 VICTORIA; 30 inches; June.

The following varieties have been grown at Wisley in recent years, but are not now represented there:

ALEXANDRA (from Bunyard); 28 inches; June.
 BERGIANA (from Guildford Hardy Plant Nursery); 33 inches; June (approaching Class VII a).
 BUTTERFLY; 16 inches; June.
 COPPERMAN; 24 inches; June.
 DR. GYDD (from Guildford Hardy Plant Nursery); 30 inches; June.
 DUKE OF YORK (Perry); 15 inches; May-June.
 EDWARD SIMMONDS (Barr); 21 inches; June.
 GEM; 24 inches; June.
 GLADYS; 32 inches; June.
 HARRIET THORSE; 28 inches; June.
 HARRISON WEIR; 24 inches; June.
 HERODOTUS; 24 inches; June.
 LORD GREY; 34 inches; June.
 LOUIS MEYER (from Barr); 21 inches; June.
 MRS. ARTHUR DUGDALE (Perry); 21 inches; June.
 M. CHEREAU; 23 inches; June.
 SIR CHARLES NAPIER; 30 inches; June.
 SIR WALTER SCOTT; 22 inches; June.

CLASS VII. VARIETIES WITH YELLOW STANDARDS AND FALLS BLUE, RED OR BROWN-PURPLE.

In this group there are four subdivisions:

- a. Standards pale yellow, falls with vein colour distinct.
- b. Standards pale yellow, falls with vein colour suffused over surface.
- c. Standards dark yellow, falls with vein colour distinct.
- d. Standards dark yellow, falls with vein colour suffused.

CLASS VII a.

Varieties with pale yellow standards and falls with colour confined to the veins.

No varieties have been selected for the Standard Collection in this class, but the following have been planted for future judgment:

GRACCHUS (Ware). F.C.C. 1885.
 MINNEHAHA (Farr).

Other varieties in Class VII a planted in the General Collection are:

BELCOLOR; June.
 MALVINA; 24 inches; June.

The following varieties have been grown at Wisley in recent years, but are not now represented there:

BEACONSFIELD; 22 inches; June.
 REGINA; 23 inches; May-June.

CLASS VII b.

Varieties with yellow standards and fall colour confluent.

GAGUS. Vigorous, of rapid increase, with somewhat glaucous foliage, 20 inches high. Flowering stems 24 inches, 6 to 8 fld. Flowers of medium size, well proportioned, stiff; standards domed, $2\frac{3}{8} \times 1\frac{1}{2}$ inch, pale lemon; falls drooping, blades $1\frac{1}{2}$ inch long and wide, creamy-white suffused except margins with Indian lake; beard cream, tipped bronze. A.M. 1916.

Sent by Messrs. Barr and Messrs. Perry.

HENRY COLLINS as grown at Wisley was indistinguishable from 'Gagus.' Flowering for a month from May 23, 1927.

LORELEY. Habit etc. of last, but standards cupped, $2\frac{1}{2} \times 1\frac{1}{2}$ inch, pale lemon; falls drooping, $1\frac{3}{8}$ inch long and wide, nigrosin-violet with cream margins and dark veins on haft; beard pale yellow. Flowering for a month from May 28, 1927.

Raised by Messrs. Goos & Koenemann.

SALONIQUE. Very vigorous and rapid of increase, foliage 24 inches. Flowering stems 28 inches, 6 fld. Flowers of medium size, and good form; standards somewhat domed, $2\frac{3}{8} \times 2\frac{3}{8}$ inches, creamy-white with faint lavender flush; falls drooping, $2 \times 2\frac{1}{2}$ inches, rich velvety auricula-purple; beard white, tipped orange. Flowering for three weeks from May 30, 1927.

Raised and sent by M. Cayeux.

Planted with the foregoing for future judgment are:

KATHRYN FRYER (Fryer).

W. J. FRYER (Fryer).

The following varieties in Class VII b are planted in the General Collection:

DALILA; 28 inches; June.

FAVOURITE; 20 inches; June.

HARMANIA; 7 inches; April-May.

HECTOR; 26 inches; June.

MARIE CORELLI; 28 inches; June.

MISS EARDLEY; 18 inches; June. A.M. 1911.

MODESTE GUERIN; 26 inches; June.

***OSSIAN**; 32 inches; June.

PFAUENAUGE; 22 inches; June.

PRINCESS VICTORIA LOUISE; 24 inches; May-June.

ROMEO; June.

The following varieties have been grown at Wisley in recent years, but are not now represented there:

BOSSEUL (Guildford Hardy Plant Nursery); 27 inches; June.

GATHORNE HARDY (from Barr); 24 inches; June.

INDIA (Perry); 24 inches; June.

CHARLES DARWIN (from Barr); 24 inches; June.

MISS NIGHTINGALE (from Veitch); 25 inches; June.

CLASS VII c.

Varieties with dark yellow standards and falls with shade of purple confined to the veins.

No standards of comparison have so far been selected in this class, but the following varieties have been planted for future judgment:

ORPHEE (Lemon).

IDION (Cayeux).

RIGOLETTE (Yeld).

RIALGAR (Sturtevant).

PRINCE FREDERICK (Nonne & Hoepker).

The following varieties have been grown at Wisley in recent years, but are not now represented there:

ADONIS (from Barr); 24 inches; June.

CICERONE (from Barr); 16 inches; June.

DANDY (from Barr); 17 inches; June.

ENCHANTRESS (from Barr); 30 inches; May-June.

* This variety from Messrs. Bunyard differs from the one long grown at Wisley under this name (see Class VI c (2)).

J. FRASER (from Barr) ; 22 inches ; June.
 PHIDIAS ; 24 inches ; May-June.
 PRINCE OF ORANGE ; 21 inches ; May-June.
 PRINCE OF WALES ; 21 inches ; June.
 YELLOW BOY (Barr) ; 7 inches ; April-May.

CLASS VII *d*.

Varieties with dark yellow standards and falls suffused with blue, red, or brown-purple.

Marsh Marigold, A.M. 1927. Vigorous and of rapid increase, with glaucous-green foliage 24 inches high. Flowering stems 28 inches, 6 fld., with flowers very closely arranged. Flowers of medium size, well proportioned, stiff ; standards domed, $2 \times 1\frac{1}{2}$ inch, empire-yellow ; falls rather drooping, $1\frac{1}{2} \times 1\frac{1}{2}$ inch, rich velvety reddish-maroon ; beard bright orange. Flowering for three weeks from May 28, 1927.

Raised by Mr. A. J. Bliss and sent by Messrs. Lowe & Gibson.

Fro, A.M. 1927. Of moderate vigour, foliage 22 inches high. Flowering stems 22 inches, 8 to 10 fld. Flowers of good form and substance, medium large ; standards domed, $2\frac{1}{2} \times 2$ inches, empire-yellow ; falls hanging straight down, $1\frac{3}{4} \times 1\frac{1}{2}$ inch, chestnut ; beard orange. Flowering for three weeks from June 1, 1927.

Sent by Messrs. Waterer.

DARIUS. Vigorous and of rapid increase, foliage 20 inches. Flowering stems 30 inches, 8 to 10 fld. Flowers very closely set, medium large, of good form and substance ; standards somewhat domed, $2\frac{3}{4} \times 1\frac{1}{2}$ inch, empire-yellow ; falls incurved at tips, otherwise hanging straight down, $1\frac{1}{2}$ inch broad and long, velvety maroon with a brownish tinge ; beard deep orange, tipped bronze. Flowering for three weeks from June 1, 1927.

Raised by Mr. Robert Parker and sent by Messrs. Barr.

FLAMING SWORD. Foliage 24, flowering stem 30 inches tall. Flowers 8 to the stem, set very closely, of good form and substance, medium large, scented ; standards domed with recurved margins, $2\frac{1}{2} \times 2$ inches, empire yellow ; falls hanging straight, $1\frac{1}{2} \times 2\frac{1}{2}$ inches, velvety reddish-chestnut, edged pale yellow ; beard bright orange. Flowering for three weeks from June 1, 1927.

Raised by Messrs. Coos & Koenemann and sent by the Orpington Nursery Co.

Other varieties in Class VII *d* planted for future judgment are :

HONORABLE. LIABAUD as grown at Wisley could not be distinguished from this. Also grown as L'HONORABLE in gardens.

GLITTER (Bliss).

REBECCA (LAWSON).

CHELLES.

SPECTABILIS (LAWSON).

The following varieties belonging to Class VII *d* are planted in the General Collection :

ANTINOUS ; 28 inches ; June.

ARAGON ; 28 inches ; June.

CITRONELLA ; 30 inches ; June. A.M. 1922.

GAMBAL ; 28 inches ; June.

GAMBOT ; 22 inches ; June.

GOLDFINCH ; 28 inches ; June (see also Class VIII *a*).

HAROLD ; 26 inches ; June. Scarcely distinguishable from 'Honorable' ; like 'SOUVENIR' also in the trials.

KNYSNA ; 30 inches ; June.

MADAME PATTI.

MIDAS ; 30 inches ; June (fig. 26).

MITHRAS ; 24 inches ; June.

MAORI KING ; 18 inches ; June.

ROBERT BURNS ; 28 inches ; June. A.M. 1891.

VONDEL ; 24 inches ; June.

The following varieties have been grown at Wisley in recent years, but are not now represented there :

ADA (from Barr) ; 24 inches ; June.

CURIOSITY (from Barr) ; $7\frac{1}{2}$ inches ; May.

PRINCESS OF TECK (Perry) ; 13 inches ; June.

TRUNBERGIAN (from Guildford Hardy Plant Nursery) ; 25 inches ; June.

VENUSTA (from Barr) ; 28 inches ; May-June.

CLASS VIII. VARIETIES WITH YELLOW FALLS AND STANDARDS.

Two subdivisions are made in this class :

- a. Standards dark yellow.
- b. Standards pale yellow.

Some of the last approach Class I, since the yellow is very pale.

CLASS VIII a.

Varieties with dark yellow standards and yellow falls.

Tall Varieties.

YELLOWHAMMER. Vigorous and of rapid increase, with green foliage, 15 inches high. Flowering stems 18 inches high, 3 fld. Flowers of medium size, good form and substance; standards somewhat domed, $2\frac{1}{2} \times 1\frac{1}{2}$ inch, bright creamy-yellow; the falls somewhat smoky yellow, $1\frac{1}{2} \times 1\frac{1}{2}$ inch, drooping. Flowering for three weeks from May 9, 1927. A.M. 1920.

Raised by M. Denis and sent by the Orpington Nursery Co.

Belonging to this class and planted for future judgment are :

AUREA. Also called **VARIEGATA AUREA.**
GOLD IMPERIAL (Sturtevant).
MONTEZUMA (Farr).
MRS. NEUBRONNER (Ware).
PRIMROSE (Sturtevant).
SHERWIN WRIGHT (Perry).
VIRGINIA MOORE (Shull).

The following varieties in this class are planted in the General Collection :

GERDA ; 17 inches ; May.
GOLDEN FLEECE ; 22 inches ; May.

Semi-dwarf Varieties.

LUTEA, H.C. 1927. Foliage green, 8 inches. Flowering stems 9 inches, 1 fld. Flowers small, well proportioned; standards domed, $1\frac{1}{2} \times 1\frac{1}{2}$ inch, pinard yellow; falls drooping, empire-yellow; beard orange. Flowering for a fortnight from April 28, 1927.

Sent by the Orpington Nursery Co.

CAUCASIAN ; 12 inches ; May.
LUTESCENS AUREA ; 10 inches ; April-May.

Dwarf Varieties.

GOLDFINCH ; 5 inches ; April-May. Distinct from 'Goldfinch' sent to former trial by Messrs. Barr (see Class VII d).
LEANDER ; 7 inches ; April-May.
ORANGE QUEEN ; 5 inches ; May.

The following variety has been grown in recent years at Wisley, but is not now represented there :

Miss H. M. WHITE (Barr) ; 8 inches ; May.

CLASS VIII b.

Varieties with pale yellow standards and yellow falls.

Tall Varieties.

Amber, A.M. 1927. Vigorous and of very free increase, foliage 24 inches high. Flowering stems 28 inches, nearly straight, 6 fld. Flowers well proportioned, stiff, of medium size; standards cupped, $2\frac{1}{2} \times 1\frac{1}{2}$ inch, rich lemon-yellow (but fades with age); falls drooping, $1\frac{1}{2} \times 2\frac{1}{2}$ inches, lemon-yellow, with margins of a deeper shade; beard bright orange. Flowering for three weeks from May 21, 1927. A.M. 1924.

Raised and sent by Mr. W. R. Dykes.

SHEKINAH. Vigorous and of rapid increase, foliage 24 inches high. Flowering stems 36 inches high, 8 fld. Flowers well proportioned, stiff, of medium size; standards domed, $2\frac{1}{2} \times 1\frac{1}{2}$ inch, creamy-yellow (fading with age); falls drooping, $1\frac{1}{2} \times 1\frac{1}{2}$ inch, pale cream; beard orange. Flowering for three weeks from June 1, 1927.

FLUTTER-BY. Flowering stems 28 inches high, 7 fld., foliage 24 inches. Flowers slightly smaller than the last and of nearly the same but perhaps a little deeper colour. Flowering for three weeks from May 28, 1927.

Raised and sent by Miss G. Sturtevant.

FLAVESCENS. Habit of last, but standards cupped, pale creamy; falls ivory, beard deep lemon-yellow. Flowering over same period as 'Flutter-by.'

An old variety from various sources.

'Canary Bird' from Mr. Pilkington proved to be identical with 'Flavescens,' but 'Canari' (see below) was not quite the same. For 'Canary Bird' of Barr see dwarf varieties below.

YELLOW MOON. Foliage 18 inches, flowering stems 26 inches tall. Flowers 6 on a stem, of medium size, well proportioned and stiff, creamy-white; standards domed with somewhat recurved margins, $2\frac{1}{2}$ inches deep and wide; falls hanging straight down, $1\frac{1}{2} \times 2$ inches. Flowering for three weeks from May 28, 1927.

Raised and sent by Miss Sturtevant.

QUEEN FLAVIA. Habit, etc., of last, but stem 4 fld. Flowers pale cream, standards cupped, beard bright orange. Flowering for three weeks from May 9, 1927.

Raised by Mr. Caparne and sent by Messrs. Wallace.

CHASSEUR. Foliage 24 inches high. Flowering stem 36 inches, 6 fld. Flowers of excellent form, larger, creamy-yellow with base of domed standards darker. Flowering for three weeks from May 28, 1927.

Raised and sent by Messrs. Vilmorin.

The following varieties are planted with the foregoing for future judgment :

BRUNETTE (Caparne).

ETTA (Caparne). A.M. 1916.

SOLEDAD (Mohr).

The following varieties in this class are planted in the General Collection :

BOSNIAMAC; 18 inches; May.

CANARI

CANARY } 24 inches; May-June. Rather deeper yellow than 'Flavescens,' *q.v.*

CHALICE; 28 inches; May-June.

EMPRESS; 18 inches; May.

FOSTER'S YELLOW; 22 inches; May-June.

HALFDAN; 24 inches; May.

HYMEN; 22 inches; June.

JEAN CHEVREAU; 24 inches; June.

MAISIE; 34 inches; June. Much like 'Flavescens.'

PERDITA; 20 inches; May-June.

SAFRANO; 32 inches; June.

SUNSHINE; 24 inches; June. A.M. 1902.

VIRGO; 18 inches; May.

The following variety has been grown in recent years at Wisley, but is not now represented there :

PEACH BLOSSOM (Perry); 25 inches; May-June.

Semi-dwarf Varieties.

STATELLAE, H.C. 1927. Vigorous and of rapid increase, with glaucous foliage 10 inches high. Flowering stems 12 inches, 2 fld. Flowers small, of good form, pale creamy-white, with orange-tipped beard; standards cupped, falls incurved. Flowering for nearly a month from April 30, 1927.

Grown from Messrs. Barr also as 'Lutescens Statellae' and long grown at Wisley under the name 'Lutescens.'

HELGE; 12 inches; May.

IVORINE; 12 inches; May.

SULPHUREA; 9 inches; April-May.

Dwarf Varieties.

BLANCHE ; 6 inches ; May.
 CHAMAEIRIS ALBA ; 8 inches ; April-May.
 CHAMAEIRIS NAOMI ; 7 inches ; April-May.
 EBURNEA ; 5 inches ; May.
 LA GRANDESSE ; 7 inches ; April-May.
 LA PERLE ; 5 inches ; April-May.
 OLRISIENSIS ALBA ; 7 inches ; April-May.
 PUMILA LUTEA ; 5 inches ; April-May.
 PUMILA LUTEA MACULATA ; 4 inches ; April-May.
 REICHENBACHIANA ; 7 inches ; April-May.

The following varieties have been grown at Wisley in recent years, but are not now represented there :

FLORIDA (various sources) ; 7 inches ; April-May.
 CANARY BIRD ; 6 inches ; April-May.
 WHITE SWAN (Barr) ; 5 inches ; April-May.

Unclassified Varieties.

The following varieties are planted with the Standard Collection for future judgment, but have not yet been assigned to their proper classes :

JULIETTE (Verdier).	CAMPBELL'S VAR.
LUCRETIA (Nonne & Hoepker).	(A. Campbell).
PLUTO (Nonne & Hoepker).	HOCHELAGO (Morgan).
VIERGE MARIE (Vilmorin).	MOUNT ROYAL (Morgan)
MA CHERIE (Perry).	HAMMOILLAH (Baker).
FLORENTINE BLUE.	MY OWN (Troup).
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AQUILEGIAS TRIED AT WISLEY, 1927.

OVER one hundred stocks of *Aquilegia* seed were sown at Wisley for trial on April 8, 1926. Of these ten stocks failed to germinate. Seedlings of the remainder were planted out in their permanent quarters on Sept. 10, and judged on two or three occasions in May and June.

In many cases special names descriptive of colour had been given to the stocks sent in, but unfortunately the plants raised did not always tally with the descriptions, and the judges were unable to recommend awards. One of the best stocks generally among the long-spurred varieties, for instance, which would have scored heavily if sent as a mixed stock of long-spurred strain, came as 'Blush Beauty,' and contained, among other things, blue-flowered plants, and consequently no award was recommended.

Many of the stocks are being kept over until next year, in order to ascertain how they will stand the winter.

AWARDS, DESCRIPTIONS AND NOTES.

A. Long-spurred Varieties.

Flowers white.

WHITE LADY (Barr).—Height 16 inches; flower $2\frac{1}{2}$ inches diameter, white faintly tinged carmine; spur $1\frac{1}{2}$ inch long. Contained blue rogues.

SILVER QUEEN (Barr).—Height 18 inches; flowers $1\frac{1}{2}$ inch diameter, opening pale cream, fading to white; spur $1\frac{1}{2}$ inch long. Contained yellow rogues.

NEWSELL'S WHITE (Vickers).—Height 3 feet; flowers $2\frac{1}{2}$ inches diameter, white tinged pink, inner petals creamy-white; spur $1\frac{1}{2}$ inch long. A mixed stock.

CHRYSANTHA GRANDIFLORA ALBA (Zwaan & van der Molen).—Height 24 inches; flowers $2\frac{1}{2}$ inches diameter, white to cream tinged pinkish; spur $1\frac{1}{2}$ inch long; seed whitish. A very mixed stock.

Flowers of yellow shades.

CHRYSANTHA GRANDIFLORA SULPHUREA (Barr).—Height 30 inches; flowers $2\frac{1}{2}$ inches diameter, deep cream tinged pink, inner petals creamy-yellow; spur $1\frac{1}{2}$ inch long. Variable in shade.

CHRYSANTHA (Watkins & Simpson, Kelway, Herb).—Height 28 inches; flowers $2\frac{1}{2}$ inches diameter, lemon flushed pink, inner petals deep lemon-yellow; spur $1\frac{1}{2}$ inch long. The last stock contained rogues of 'Skinneri' form.

GIANT YELLOW and PRIMROSE SHADES (Barr).—Height 36 inches; flowers $2\frac{1}{2}$ inches diameter, pale cream to lemon tinged pink, inner petals lemon-yellow; spur $1\frac{1}{2}$ inch long. Contained white and cream rogues.

NEWSELL'S YELLOW (Vickers).—Height 28 inches; flowers $2\frac{1}{2}$ inches diameter, deep cream tinged pink, inner petals lemon-yellow; spur $1\frac{1}{2}$ inch long. A mixed stock.

Flowers of pink shades.

BLUSH BEAUTY (Barr).—Height 28 to 30 inches; flowers $2\frac{1}{2}$ to $2\frac{3}{4}$ inches diameter, generally cream flushed rose-pink, inner petals pale cream; spur $1\frac{1}{2}$ to $1\frac{3}{4}$ inch long. Variable in colour. A very good strain, but not true to colour description.

ROSE QUEEN (Barr).—Height 30 inches; flowers 2 to $2\frac{1}{2}$ inches diameter, cream suffused rose, inner petals pale cream; spur $1\frac{1}{2}$ inch long. Variable in shade. A good mixed strain.

NEWSELL'S PINK (Vickers).—Height 28 to 30 inches; flowers $2\frac{1}{2}$ inches diameter, cream flushed deep pink, inner petals lemon-yellow; spur $1\frac{1}{2}$ inch long. A very variable stock.

Flowers red and yellow.

AWARD.

Rose and Pink Shades, H.C. June 1, 1927. Raised by the late Rev. J. Jacob and sent by Messrs J. Carter of Raynes Park, S.W.

ROSE AND PINK SHADES (Carter), H.C.—Height 20 to 24 inches; flowers $2\frac{1}{2}$ to 3 inches diameter, cream suffused carmine to red, inner petals creamy-white; spur $1\frac{1}{2}$ to 2 inches long. Somewhat variable in shade.

RED AND YELLOW (Carter).—Height 24 inches; flowers $2\frac{1}{2}$ inches diameter, pale rosy-red, inner petals deep cream; spur $1\frac{1}{2}$ inch long. Variable in shade.

UPPING RED AND YELLOW (Barr).—Height 20 inches; flowers 2 inches diameter, rosy-scarlet, inner petals creamy-yellow; spur $1\frac{1}{2}$ inch long. Variable in shade.

BRILLIANT (Barr).—Height 28 inches; flowers $1\frac{1}{2}$ to $2\frac{1}{2}$ inches diameter, bright rosy-scarlet, tips paler, inner petals creamy-yellow; spur $1\frac{1}{2}$ to $1\frac{3}{4}$ inch long. Contained carmine and white rogues.

NEWSELL'S RED (Vickers).—Height 30 inches; flowers $1\frac{1}{2}$ inch diameter, rich rosy-scarlet, inner petals dull yellow; spur $1\frac{1}{2}$ inch long. Contained yellow and cream rogues.

SCOTLAND YET (Storrie & Storrie).—Height 30 inches; flowers of shades of rosy-scarlet and carmine; inner petals cream to pale yellow; spur $1\frac{1}{2}$ to $1\frac{3}{4}$ inch long. Very variable in colour.

SKINNERI (Barr, Herb, Watkins & Simpson, Kelway).—Height 26 inches; flowers $1\frac{1}{2}$ inch diameter, greenish-yellow flushed red, inner petals greenish-yellow; spur $1\frac{1}{2}$ inch long. Messrs. Watkins & Simpson's stock was somewhat dwarfer and of more compact habit than the others.

CANADENSIS NANA (Barr). } —Height 18 to 24 inches; flowers $1\frac{1}{2}$ inch
CANADENSIS (Barr). } diameter, terra-cotta on yellow, inner petals lemon-yellow; spur $1\frac{1}{2}$ inch long.

CALIFORNICA HYBRIDA (Barr, Watkins & Simpson).—Height 28 to 32 inches; flowers $2\frac{1}{2}$ inches diameter, yellow flushed red, inner petals lemon; spur $1\frac{3}{4}$ inch long.

TRUNCATA (Barr).—Characters as 'Californica hybrida.'

JAETSCHANII (Barr).—Characters as 'Californica hybrida.'

Flowers of blue shades.

AWARDS.

coerulea Mrs. M. Nicholls, A.M. June 1, 1927. Raised by Mr. M. Nicholls and sent by Messrs. Zwaan & van der Molen of Voorburg, The Hague, Holland, and Messrs. J. Carter.

coerulea, H.C. June 1, 1927. Sent by Messrs. Watkins & Simpson of Drury Lane, Covent Garden, W.C. 2.

Blue Hybrids, H.C. June 1, 1927. Raised by the late Rev. J. Jacob and sent by Messrs. J. Carter.

COERULEA MRS. M. NICHOLLS (Zwaan & van der Molen, Carter), A.M.—Height 16 to 18 inches; flowers 3 inches diameter, Cambridge-blue, inner petals white tinged blue; spur $1\frac{1}{2}$ inch long. Very good even stocks.

COERULEA (Watkins & Simpson), H.C.—Like last, but not quite so vigorous.

COERULEA (Barr, J. C. Wheeler).—Very mixed stocks.

BLUE HYBRIDS (Carter), H.C.—Height 24 inches; flowers 3 inches diameter, Cambridge-blue, tips much paler, inner petals pale creamy-white tinged blue; spur $1\frac{1}{2}$ inch long. Contained white rogue.

NEWSELL'S GIANT BLUE (Vickers).—A very mixed stock, of 'coerulea' form.

Flowers of mixed colours.

AWARDS.

Mrs. Scott Elliott's Strain, H.C. June 1, 1927. Raised by Mrs. Scott Elliott and sent by Messrs. Watkins & Simpson, Daniels of Norwich, W. H. Simpson of Birmingham.

Diadem, H.C. June 1, 1927. Raised and sent by Messrs. E. Webb of Stourbridge.

Selected Hybrids, H.C. June 1, 1927. Sent by Messrs. Zwaan & van der Molen

Selected, H.C. June 1, 1927. Raised and sent by Messrs. Blackmore & Langdon of Langport, Somerset.

Long Spurred Hybrids, C.—June 1, 1927. Sent by Messrs. Watkins & Simpson.
Long Spurred, C. June 1, 1927. Raised and sent by Messrs. Stuart & Mein of Kelso.

Mrs. SCOTT ELLIOTT'S STRAIN (Watkins & Simpson, Daniels, W. H. Simpson), **H.C.**—Height 28 to 30 inches; flowers $2\frac{1}{2}$ to 3 inches diameter, pink, red, carmine and pale blue shades; spur $1\frac{1}{2}$ to $1\frac{3}{4}$ inch long.

DIADEM (Webb), **H.C.**—Height 24 inches; flowers $2\frac{1}{2}$ to $2\frac{3}{4}$ inches diameter, blush, carmine, red and blue shades; spur $1\frac{1}{2}$ inch long.

SELECTED HYBRIDS (Zwaan & van der Molen), **H.C.**—Height 26 inches; flowers $2\frac{1}{2}$ to $2\frac{3}{4}$ inches diameter, blush, red and blue shades; spur $1\frac{1}{2}$ inch long.

SELECTED (Blackmore & Langdon), **H.C.**—Height 26 inches; flowers $2\frac{1}{2}$ inches diameter, blush, deep red and pale blue shades; spur $1\frac{1}{2}$ inch long.

LONG SPURRED HYBRIDS (Watkins & Simpson), **C.**—Height 22 inches; flowers $2\frac{1}{2}$ to $2\frac{3}{4}$ inches diameter, pink, carmine, red and pale blue shades; spur $1\frac{1}{2}$ inch long.

LONG SPURRED (Stuart & Mein), **C.**—Height 24 inches; flowers $2\frac{1}{2}$ inches diameter, pale pink, carmine, red and blue shades; spur $1\frac{1}{2}$ inch long.

MELROSE HYBRIDS (Wall).—Flowers mostly blush, carmine and deep red.

ENGLAND'S GLORY (Storrie & Storrie).—Flowers white, pink and carmine.

IMPERIAL HYBRIDS (Dobbie).—No. 1 selection flowers pink, carmine, red and blue; No. 2 selection flowers carmine, red, blue and magenta.

EXTRA SELECTED HYBRIDS (Barr).—Flowers yellow, blush, magenta and maroon.

LONG SPURRED HYBRIDS (J. C. Wheeler).—Flowers yellow, carmine, red and blue.

LONG SPURRED HYBRIDS (Cullen).—Flowers blush, pink, red and blue.

LONG SPURRED HYBRIDS (R. Veitch).—Flowers blush, red and blue.

LONG SPURRED (Carter).—Flowers pink on white, blush and red.

LONG SPURRED (Pearson).—Flowers carmine, red and blue.

CHOICE MIXED (Webb).—Flowers blush, red on yellow, and pale blue.

CHOICE HYBRIDS (Dawkins).—Flowers blush, carmine, red and pale blue.

PRIME MINISTER (Storrie & Storrie).—Flowers pale pink to rosy red, white, cream and blue shades.

MIXED (Storrie & Storrie).—Flowers yellow flushed carmine, red and blue.

MELROSE HYBRIDS (Wall).—Flowers white tinged pale pink, and blue.

HYBRIDS (Varian).—Stock mixed in colour and form of flowers.

COERULEA DELICATISSIMA (Barr).—Flowers pink, carmine and red shades.

B. Short-spurred Varieties.

Flowers white.

FLABELLATA (Barr).—Height 10 inches; flowers $1\frac{1}{2}$ inch diameter, drooping, dirty white; sparse flowerer; spur curved, $\frac{3}{4}$ inch long.

MUNSTEAD WHITE (Barr).—Height 28 to 30 inches; flowers $1\frac{1}{2}$ inch diameter, drooping, creamy-white; spur straight, $\frac{1}{2}$ inch long. Contained reddish-purple rogues.

NIVEA GRANDIFLORA (Kelway).—Height 24 to 28 inches; flowers $1\frac{1}{2}$ inch diameter, creamy-white; spur curved, $\frac{1}{2}$ inch long. Contained reddish-purple rogues.

Flowers of blue shades.

AWARDS.

glandulosa, A.M. June 1, 1927. Sent by Messrs. Barr of King Street, Covent Garden, W C. 2.

pyrenaica grandiflora, H.C. June 1, 1927. Sent by Messrs. Barr.

olympica, H.C. June 1, 1927. Sent by Messrs. Barr.

ALPINA (Barr).—Height 12 inches, of compact habit; flowers $2\frac{1}{2}$ inches diameter, Oxford-blue; spur $\frac{1}{2}$ inch diameter; suitable for the rock garden.

GLANDULOSA (Barr), **A.M.**—Height 9 to 10 inches, of compact habit; flowers $1\frac{1}{2}$ inch diameter, bright Oxford-blue, inner petals white flushed Oxford-blue; spur curved, $\frac{1}{2}$ inch long; suitable for the rock garden.

HELENÆ (Barr).—Height 10 to 12 inches; flowers $2\frac{1}{2}$ inches diameter, Oxford-blue, inner petals white; spur curved, $\frac{1}{2}$ inch long. A mixed stock.

PYRENAICA GRANDIFLORA (Barr), **H.C.**—Height 16 to 18 inches; flowers droop, $2\frac{1}{2}$ inches diameter, dull Oxford-blue; spur curved, $\frac{1}{2}$ inch long.

ALPINA ATRO-COERULEA (Barr).—Height 22 to 26 inches; flowers droop, $2\frac{1}{2}$ inches diameter, deep Oxford-blue; spur $\frac{1}{2}$ inch long. A mixed stock.

REUTERI (Barr).—Height 15 to 16 inches ; flowers droop, 2½ inches diameter, dull Oxford-blue ; spur ⅝ inch long.

ALPINA SUPERBA (Barr).—Height 18 to 20 inches ; flowers 2½ inches diameter, violet-blue, inner petals white ; spur ⅝ inch long. A mixed stock.

OLYMPICA (Barr), H.C.—Height 18 to 20 inches ; flowers 2½ inches diameter, bluish-violet, inner petals white ; spur ⅝ inch long.

BLUE BOY (Barr).—Height 26 to 28 inches ; flowers 2½ inches diameter, droop, Oxford-blue ; spur curved at tip, ½ inch long. Contained white, pink and red rogues.

BLUE AND WHITE STRAIN (Barr).—Height 32 to 36 inches ; flowers droop, 1½ to 1¾ inch diameter, deep violet-blue, inner petals white ; spur curved at tip, ⅝ inch long.

ARCTICA (Barr).—Height 30 inches ; flowers 1½ inch diameter, rich violet-blue ; spur curved at tip, ¾ inch long ; somewhat variable in shade.

BAIKALENSIS (Barr).—Height 28 to 30 inches ; flowers droop, 2½ inches diameter, deep bluish-violet ; spur ⅝ inch long. Contained pink, blue and white rogues.

Flowers bluish-maroon.

ATRATA (Barr).—Height 32 inches ; flowers droop, 2 inches diameter, deep bluish-maroon ; spur curved, ⅝ inch long.

Flowers of mixed colours.

HAYLODGENSIS CUPREATA (Herb).—Flowers mostly dull carmine to greyish-lavender, drooping, of 'vulgaris' form.

HAYLODGENSIS (COERULEA HYBRIDA) (Herb).—Flowers blush or pale blue, of vulgaris form.

C. Semi-double Varieties.

Flowers yellow and pink.

CHRYSANTHA FL. FL. (Herb, Barr).—Height 24 to 26 inches ; flowers 1½ inch diameter, deep cream tinged pink, inner petals lemon-yellow ; spur 1 inch long. Contained 50 per cent. single rogues.

CALIFORNICA HYBRIDA DOUBLE (Barr).—A semi-double form of the type.

Flowers maroon.

CARYOPHYLLOIDES FL. FL. (Barr).—Height 24 inches ; flowers 1 inch diameter, deep maroon ; spur curved, ½ inch long. Contained red, maroon and white rogues.

DURANDII FL. FL. (Barr).—Characters as 'caryophylloides fl. pl.' ; variable in shade.

Flowers of mixed colours.

HYBRIDA VERNALIS (Barr).—Height 24 to 30 inches ; flowers 1 to 1½ inch diameter, white, pink and blue shades, spur ½ to ¾ inch long. Contained single rogues.

D. Double Varieties.

Flowers rose-pink.

FORMOSA DOUBLE ROSE (Barr).—Height 16 inches ; flowers ¾ inch diameter, pale rose-pink ; spur curved, ½ inch long. Contained double blue and single pink rogues.

Flowers carmine.

DWARF DOUBLE CARMINE (Barr) —Height 16 inches ; flowers ¾ inch diameter, reddish-carmine ; spur ¾ inch long. Contained single and blue rogues.

Flowers reddish-maroon.

FORMOSA DOUBLE RED (Barr).—Height 16 inches ; flowers ¾ inch diameter, reddish-maroon ; spur ¾ inch long, curved.

Flowers blue.

FORMOSA DOUBLE BLUE (Barr).—Height 22 to 24 inches ; flowers ¾ inch diameter, Cambridge-blue, tips green ; spur ¾ inch long, curved. Contained semi-double, maroon, pink and white rogues.

Flowers of mixed colours.

DOUBLE STAR MIXED (Barr).—Height 30 inches ; flowers 1 inch diameter, without spur.

AUBRIETIAS AT WISLEY, 1927.

THIRTY-FOUR stocks of Aubrietia were planted in the trial at Wisley in 1926 and judged in 1927. Of these two varieties, 'The Queen' and 'Excelsa,' did not recover their journey to Wisley; the others made fairly satisfactory growth planted on raised beds of sandy soil. Aubrietias are, however, seen to their best advantage hanging over rocks, and they flourish best so. The awards recommended by the Judging Committee, who passed final judgment on April 8, 1927, are indicated below.

AWARDS, DESCRIPTIONS AND NOTES.

Flowers pink.

BRIDESMAID (Barr).—Flowers $\frac{5}{16}$ inch diameter, pale bluish-pink; free flowering. Sent also in error as 'Lilac Queen.'

LISSADELL PINK (Gore-Booth, Barr).—Height 3 to 4 inches; flowers $\frac{1}{2}$ inch diameter, mallow-pink; free flowering.

Flowers rose-pink.

AWARD.

Gloriosa, H.C. April 8, 1927. Raised by Messrs. Prichard and sent by Messrs. Prichard of Christchurch, Hants, and Messrs. Ruys of Dedemsvaart, Holland.

OLYMPICA (Botanic Gardens, Zurich).—Flowers $\frac{3}{8}$ inch diameter, pale rose-pink; free flowering.

ATTRACTION (Prichard).—Flowers $\frac{3}{8}$ inch diameter, pale rose-pink; free flowering.

MAURICE PRICHARD (Prichard).—Flowers $\frac{5}{16}$ inch diameter, pale rose; free flowering. A paler shade than 'Gloriosa.'

GLORIOSA (Prichard, Ruys), **H.C.**—Flowers $\frac{5}{16}$ inch diameter, clear rose; very free flowering.

ROSEA SPLENDENS (Prichard).—Flowers $\frac{5}{16}$ inch diameter, rose, deepens as flower ages; free flowering.

Flowers rosy-red.

AWARD.

Vindictive, A.M. April 8, 1927.—Raised and sent by Messrs. Clarence Elliott of Stevenage, Herts.

RUSSELL'S CRIMSON (Bartholomew).—Flowers $\frac{1}{2}$ inch diameter, rosy-red; free flowering. Much like 'Crimson King,' and near 'Fire King' in colour.

CRIMSON KING (Barr).—Much like 'Russell's Crimson,' but flowers of a somewhat darker shade.

FIRE KING (Barr).—Flowers $\frac{1}{10}$ inch diameter, bright rich rosy-red; free flowering. Paler than 'Vindictive.'

VINDICTIVE (Clarence Elliott), **A.M.**—Plant very vigorous; flowers $\frac{1}{2}$ inch diameter, rich bright rosy-red, fading somewhat; very free flowering.

Flowers pale lavender.

AWARD.

Studland, H.C. April 8, 1927. Raised and sent by Messrs. Prichard.

TAURICOLA ALBA (Barr).—Flowers $\frac{1}{10}$ inch diameter, white faintly flushed pale lavender; petals separated.

PURPUREA (Dobbie).—A paler form of 'graeca.' Sent as seed.

GRAECA (Kelway).—Flowers $\frac{1}{8}$ inch diameter, pale lavender; petals apart; very free flowering. Sent as seed.

GRAECA SUPERBA (Barr).—Much like 'Studland,' but paler and with a less pink tinge.

LAVENDER (Clarence Elliott).—Near 'graeca superba' in colour.

STUDLAND (Prichard), H.C.—Height 4 inches; flowers $\frac{1}{8}$ inch diameter; pale lavender; petals overlap; free flowering.

Flowers violet.

AWARDS.

J. S. Baker, H.C. April 8, 1927. Sent by Messrs. Barr of King Street, Covent Garden, W.C.

Prichard's A.1., C. April 8, 1927. Raised by Messrs. Prichard and sent by Messrs. Barr.

AUBREY PRICHARD (Prichard).—Flowers $\frac{1}{8}$ inch diameter, lavender-violet, petals overlap; very free flowering. A less red tinge than 'H. Marshall.'

J. S. BAKER (Barr), H.C.—Flowers $\frac{1}{8}$ inch diameter, violet-blue, eye white; petals overlap; very free flowering.

H. MARSHALL (Barr).—Flowers $\frac{1}{8}$ inch diameter, bright amethyst-violet, petals just apart; very free flowering.

LEICHTLINI (Dobbie).—Near 'H. Marshall' in colour, fading; individual plants vary in shade. Sent as seed.

PRICHARD'S A.1. (Barr), C.—Flowers $\frac{1}{8}$ inch diameter, violet, eye creamy-white; petals overlap; very free flowering.

DR. MULES (Barr).—Flowers $\frac{1}{8}$ inch diameter, rich violet-blue; petals overlap; very free flowering.

MRS. LLOYD EDWARDS (Barr).—Darkest of the violets.

Flowers purple.

AWARDS.

Carnival, A.M. April 8, 1927. Raised and sent by Messrs. Clarence Elliott.

Magician, H.C. April 8, 1927. Sent by the Royal Horticultural Society.

PETER BARR (Barr).—Flowers $\frac{1}{8}$ inch diameter, rosy-purple; petals just overlap; free flowering.

MRS. E. M. CROSFIELD (Barr).—Much like 'Peter Barr' in colour; flowers $\frac{1}{8}$ inch diameter.

CARNIVAL (Clarence Elliott), A.M.—Flowers 1 inch diameter, rich purplish-violet; petals overlap; very free flowering.

GLORY (Ruys).—Flowers $\frac{1}{8}$ inch diameter, rich purple; petals just overlap; free flowering.

MAGICIAN (R.H.S.), H.C.—Flowers $\frac{1}{8}$ inch diameter, rich purple; petals overlap; very free flowering.

GURGEDYKE (Salmon, Taylor).—Flowers $\frac{1}{8}$ inch diameter, rich velvety purple; petals overlap; free flowering.

DAHLIAS AT WISLEY, 1927.

IN volume 49, p. 50, we gave a *résumé* of the classification of Garden Dahlias which had been adopted a few years before, together with figures illustrating the classes and a list of Dahlias to which awards had been made, grouped according to these classes. In succeeding volumes the awards made in subsequent years have been published (see vols. 50, p. 106; 51, p. 138; 52, p. 88). The trials have been continued on the same lines as heretofore, except that a larger number of each variety of the Mignon type was included. Several, however, sent in as of this type proved to be too tall, and are to be sought in other than Class II, including some entered as Mignons in the 1926 notes. The name "Charm Dahlias" is now coming into use for the small-flowered Pæony Dahlias (Class VI). In all 336 stocks were grown, and the awards made and descriptions of those grown for the first time in 1927 are to be found below.

AWARDS, DESCRIPTIONS, AND NOTES.

Class I. SINGLE DAHLIAS.

FLOWERS OF TYPE B.

AWARD.

Thomas Moore, H.C. September 7, 1927. Sent by Mr. J. B. Riding of Chingford, Essex.

White and Scarlet.

SOLEURE (van Tubergen).—2½ feet. Flowers 3½ to 4 inches, with large disc; white broadly edged bright scarlet; free, on 8- to 10-inch stalks, well above foliage.

Yellow.

YELLOW TRANSPARENT (Carlée).—2 to 2½ feet. Flowers 3½ to 4 inches, with medium-sized disc; pale sulphur, tips pale creamy-yellow; very free, on 4- to 7-inch stalks, well above foliage.

DAFFODIL (Cheal).—24 to 28 inches. Flowers 3½ to 3¾ inches; pale clear lemon-yellow; free, on 6- to 8-inch stalks, well above foliage.

Scarlet.

MRS. KATHLEEN CARWILHEN (Treseder).—3½ feet. Flowers 4 inches, with large disc; dull scarlet; free, on 6- to 9-inch stalks, well above foliage.

THOMAS MOORE (Riding, H.C.).—2½ feet. Flowers 3 to 3½ inches; scarlet; very free, on 4- to 6-inch stalks, carried well above the foliage.

RHYDD SCARLET (Oram).—4½ feet. Flowers 5 to 6 inches; wind-milly, margins of petals curled; rich deep scarlet; free, on 4- to 8-inch stalks, neck weak, carried just above foliage.

Maroon.

DAPHNE (Cheal).—26 to 28 inches. Flowers 3 to 3½ inches; rich crimson-maroon; free, carried well above foliage, on 6- to 9-inch stalks.

Purple.

COLTNESS PURPLE (Johns).—28 to 30 inches. Flowers 3 to 3½ inches, rich ruby-crimson, tips paler; free, on 4- to 6-inch stalks, well above foliage.

Class II. MIGNON SINGLE DAHLIAS.

AWARDS.

Rotherhithe Gem, H.C. September 7, 1927. Raised and sent by Mr. C. A. Johns of Bermondsey Parks.

Powercourt, Yellow, H.C. September 7, 1927. Raised by Mr. Lee and sent by Messrs. Treseder of Cardiff.

Northern Gem, H.C. September 7, 1927. Raised and sent by Messrs. Dickson & Robinson of Manchester.

Bermondsey Gem, H.C. September 7, 1927. Raised and sent by Mr. C. A. Johns.

Harold, H.C. September 7, 1927. Raised and sent by Messrs. Cheal of Crawley, Sussex.

Kabouter, H.C. September 7, 1927. Raised by Mr. Dominicus and sent by Messrs. van Tubergen of Haarlem, Holland.

White.

ROEM VAN SCHIEDAM (Carlée).—16 to 18 inches. Flowers 4 to 5½ inches, medium disc; white, tinged cream; free, on 5- to 6-inch stalks, at first hidden by foliage, afterwards above.

NIVEUS (Cheal).—16 inches. Flowers 3½ to 3½ inches; creamy-white, base lemon; free, on 4- to 6-inch stalks, well above foliage.

Yellow.

ADA (Riding).—18 to 20 inches. Flowers 3 inches diameter; sulphur, tips paler; free, on 4- to 5-inch stalks, well above foliage.

MIDGET (Dobbie).—16 to 18 inches. Flowers 3½ to 3½ inches; picric yellow faintly flushed apricot; free, on 4- to 6-inch stalks, well above foliage.

MORNING LIGHT (van Tubergen).—15 to 18 inches. Flowers 3½ inches; bright pale lemon-yellow; free, on 6-inch stalks, well above foliage.

ROTHERHITHE GEM (Johns, H.C.).—18 inches. Flowers 3½ to 4 inches; picric-yellow; very free, on 6-inch stalks, carried well above foliage.

DUNECHT GEM (Carter Page).—20 inches. Flowers 3½ inches; tips of petals reflexed; pale lemon-yellow; free, on 4- to 6-inch stalks, well above foliage. Also sent by Messrs. Cheal and van Tubergen under the names 'Dunecht' and 'Dunecht Yellow.'

Yellow, tinged red.

DINKIE (Dobbie).—16 to 18 inches. Flowers 3½ inches; picric-yellow flushed apricot; free, on 6- to 8-inch stalks, carried well above foliage.

MOONBEAM (Dobbie).—15 to 18 inches. Flowers 3½ to 3½ inches; picric-yellow suffused apricot, tips pinkish-carmine; free, on 4- to 6-inch stalks, well above foliage.

POWERSCOURT YELLOW (Treseder, H.C.).—18 to 20 inches. Flowers 3½ to 3½ inches; picric-yellow faintly flushed apricot, more so at base and margins of petals; very free, on 6-inch stalks, well above foliage.

NORTHERN BRONZE (Dickson & Robinson).—16 to 18 inches. Flowers 3½ to 3½ inches, picric-yellow shaded orange-buff; tips of petals reflexed; free, on 6- to 8-inch stalks, well above foliage.

Pink.

JUBILEE (Cheal).—20 to 22 inches. Flowers 4 inches; white flushed pale rose-pink, tips paler; free, on 6-inch stalks, well above foliage.

MAJOR VAN SWEETEN (Cheal).—22 inches. Flowers 3½ to 3½ inches; creamy rose-pink, base suffused orange; free, on 6- to 10-inch stalks, well above foliage.

PRINCE HENDRICK (Carlée).—18 to 20 inches. Flowers 3½ inches; blush; free, on 4- to 6-inch stalks, well above foliage.

NORTHERN GEM (Dickson & Robinson, H.C.).—20 inches. Flowers 4 to 4½ inches; bright light amaranth-pink, base darker on orange; very free, on 6- to 10-inch stalks, well above foliage.

ROSALIND (van Tubergen).—20 inches. Flowers 3½ to 4 inches, bright-rose, base zoned crimson; free, on 6- to 8-inch stalks, well above foliage.

FAIRY (Riding).—20 inches. Flowers 3 to 3½ inches, bright deep amaranth-pink, base shaded yellow; free, on 3- to 5-inch stalks, above foliage.

ROSEBUD (Cheal).—10 to 12 inches, very compact. Flowers 3½ inches; pale old rose on cream, base lemon; free, on 4- to 6-inch stalks, only just above foliage.

Orange-scarlet.

META (Cheal).—20 inches. Flowers $3\frac{1}{2}$ to $3\frac{1}{2}$ inches; pale orange-scarlet, fades much; free, on 4- to 6-inch stalks, well above foliage.

ORANGE FLAG (Carlée).—14 to 16 inches. Flowers $3\frac{1}{2}$ inches; bright orange-red; tips of petals reflexed; free, on 4- to 6-inch stalks, at first hidden by foliage, afterwards above.

GRACE (Cheal).—18 inches. Flowers $3\frac{1}{2}$ inches; dull orange-scarlet; petals partially separated; free, on 6-inch stalks, well above foliage.

BERMONDSEY GEM (Johns), H.C.—20 to 22 inches. Flowers $3\frac{1}{2}$ to $3\frac{1}{2}$ inches; bright pale orange-red, base scarlet; free, on 6- to 8-inch stalks, well above foliage. Also sent by the same sender as 'Seedling No. 1.'

ORANJETELG (Ballego).—12 inches, very compact. Flowers $2\frac{1}{2}$ to 3 inches; pale dull orange-scarlet, tips pale orange; free, on 3- to 4-inch stalks, well above foliage.

ORANGE NASSAU (van Tubergen).—20 to 22 inches. Flowers 3 inches; orange-scarlet; free, on 6- to 8-inch stalks, well above foliage.

TURNER'S GEM (Turner), H.C. 1926.—See 'Orange Gem,' JOURNAL R.H.S., 52, p. 90, the name having been changed.

Scarlet.

JULES CLOSON (Carter Page).—18 inches. Flowers 3 inches; scarlet; very free, on 4- to 6-inch stalks, well above foliage.

ROODKAPJE (Carter Page).—24 inches. Flowers $3\frac{1}{2}$ to $3\frac{1}{2}$ inches; scarlet; free, on 6- to 8-inch stalks, well above foliage.

PRINCE OF ORANGE (Ballego).—22 inches. Flowers $3\frac{1}{2}$ inches; crimson-scarlet; petals channelled, partially separated; free, on 6- to 8-inch stalks, well above foliage.

PETER PAN (Dobbie).—Much resembles 'Coltness Gem.'

BENBOW (Cheal).—15 inches. Flowers $3\frac{1}{2}$ to $3\frac{1}{2}$ inches; crimson-scarlet; fades; free, on 4- to 6-inch stalks, well above foliage.

LANCER (Cheal).—22 inches. Flowers $3\frac{1}{2}$ to $3\frac{1}{2}$ inches; rich scarlet; free, on 4- to 7-inch stalks, well above foliage.

LUSTRE (Cheal).—18 inches. Flowers 3 inches; bright crimson-scarlet; free, on 4- to 6-inch stalks, well above foliage.

Crimson.

HAROLD (Cheal), H.C.—18 inches. Flowers $3\frac{1}{2}$ inches; rich crimson-scarlet; free on 4- to 8-inch stalks, well above foliage.

ETNA (Cheal).—16 to 18 inches. Flowers $3\frac{1}{2}$ to 4 inches; crimson-scarlet; free, on 4- to 6-inch stalks, well above foliage.

ROY (Cheal).—16 to 18 inches. Flowers 3 inches; rich crimson; free, on 4- to 6-inch stalks, well above foliage.

ETHEL (Cheal).—18 to 20 inches. Flowers 3 to $3\frac{1}{2}$ inches; deep crimson, base zoned darker; tips of petals reflexed; free, on 4- to 6-inch stalks, well above foliage.

AVONDROOD (Carlée).—20 to 22 inches. Flowers $\frac{1}{2}$ inches; deep crimson; free, on 4- to 8-inch stalks, at first hidden by foliage, afterwards above.

ROUGE ET NOIR (van Tubergen).—24 inches. Flowers $3\frac{1}{2}$ to 4 inches; deep crimson; free, on 4- to 6-inch stalks, well above foliage.

VESUVIUS (Riding).—18 inches. Flowers 3 inches; deep crimson; free, on 4- to 7-inch stalks, above foliage.

THE NIGHT (Carter Page).—18 to 20 inches. Flowers 3 to $3\frac{1}{2}$ inches; crimson, tips purplish-crimson; free, on 4- to 6-inch stalks, well above foliage.

PICCANINNI (Carter Page).—20 inches. Flowers 3 inches; crimson; free, on 4- to 9-inch stalks, well above foliage; foliage purplish.

Purple.

ROI DES BORDURES (Ballego).—6 to 8 inchs, habit very dwarf and compact. Flowers 2 inches; purplish-magenta; fairly free, on 2- to 3-inch stalks, above foliage; petals channelled and separated.

KABOUTER (van Tubergen), H.C.—20 to 22 inches. Flowers 4 to $4\frac{1}{2}$ inches; rich ruby-red; free, on 6- to 8-inch stalks, well above foliage.

RUBY (Riding).—22 to 24 inches. Flowers 3 to $3\frac{1}{2}$ inches; ruby-red; free, on 4- to 6-inch stalks, well above foliage.

Class V. PÆONY-FLOWERED DAHLIAS.

Orange-Pink.

FLORENCE CABLE (Broadhead).—4½ feet. Flowers 6 to 7 inches; dull orange-pink; drooping, neck weak, on 12- to 14-inch stalks, somewhat free, above foliage.

Class VI. SMALL-FLOWERED PÆONY-FLOWERED DAHLIAS.

AWARDS.

Elma D. Cook, A.M. September 7, 1927. Raised and sent by Mr. A. J. Cobb of University of Reading.

Irma, A.M. September 7, 1927. Raised by Messrs. J. Burrell of Howe House Nurseries, Cambridge.

Mrs. J. Goddard, A.M. September 7, 1927. Raised and sent by Messrs. J. Cheal.

Zillah, H.C. September 7, 1927. Raised and sent by Messrs. J. Burrell.

Cora, H.C. September 7, 1927. Raised and sent by Messrs. Turner of Slough.

Florrie, H.C. September 7, 1927. Raised and sent by Mr. W. J. Unwin of Histon, Cambridge.

Ruth, H.C. September 7, 1927. Raised and sent by Messrs. J. Burrell.

Aida, H.C. September 7, 1927. Raised and sent by Messrs. Turner.

Wanda, H.C. September 7, 1927. Raised and sent by Messrs. J. Burrell.

White.

LILLY (Burrell).—3½ feet. Flowers 4 inches; white, base of petals lemon; drooping, neck weak, on 6- to 12-inch stalks, free flowering, well above foliage.

Yellow.

LADY MADDEN (Cheal).—3½ feet. Flowers 3 to 3½ inches; pale cream; margins of petals recurved; free, erect, on 6- to 12-inch stalks, well above foliage.

ELMA D. COOK (Cobb), A.M.—4 feet. Flowers 3½ inches, pale lemon-yellow; erect, on 6- to 12-inch stalks, free, and well above foliage.

VEDAS (Burrell).—3½ to 4 feet. Flowers 4 to 4½ inches; lemon-yellow; erect, on 6- to 12-inch stalks, free, and above foliage.

DOT (Unwin).—3 feet. Flowers 3 to 4 inches, lemon-yellow, tips shaded dull terra-cotta, petals channelled; free, erect, on 6- to 10-inch stalks, well above foliage.

FREDA (Unwin).—4 feet. Flowers 3½ to 4½ inches; bright golden-apricot; petals channelled; free, drooping, on 6- to 12-inch stalks, well above foliage.

GOLDEN CROWN (Unwin).—3½ feet. Flowers 4 to 4½ inches; bright golden buff; petals channelled; free, drooping, on 6- to 15-inch stalks, well above foliage.

Pink on Yellow.

MARGARET (Unwin).—3 feet. Flowers 3½ to 4 inches; pale orange-pink, tips golden; erect, free, on 6- to 14-inch stalks, well above foliage.

EMMELINE (Burrell).—4 feet. Flowers 4 inches; dull pale amaranth-pink on yellow; free, erect, on 6- to 12-inch stalks, above foliage.

MAGGIE (Burrell).—4 feet. Flowers 3½ inches; dull phlox-purple on orange, centre flushed orange red; fades; free, erect, on 4- to 12-inch stalks, well above foliage.

LENORE (Burrell).—4½ feet. Flowers 3 to 3½ inches; rich amaranth-pink on orange, golden centre; free, erect, on 4- to 12-inch stalks, well above foliage.

ZILLAH (Burrell), H.C.—3½ feet. Flowers 4 to 4½ inches; bright tyrian-rose on yellow, centre orange; free, erect, on 6- to 14-inch stalks, above foliage.

PEGGY (Unwin).—4 feet. Flowers 4 inches, pale pinkish-terra-cotta on yellow; free, erect, neck weak, on 6- to 10-inch stalks, above the foliage.

TIBOTHE (Burrell).—4 feet. Flowers 4 inches; dull terra-cotta on yellow; free, erect, on 4- to 9-inch stalks, at first hidden by foliage, afterwards above.

BRIGHTON GEM (Cheal).—3½ feet. Flowers 4 to 4½ inches; bright cerise, tips paler, centre lemon; free, drooping, on 6- to 12-inch stalks.

CORA (Turner), H.C.—5 feet. Flowers 4 inches; bright cerise shaded orange at centre; free, erect, on 6- to 12-inch stalks, at first hidden by foliage, afterwards above.

Apricot and Pink.

MAMIE (Unwin).—2½ feet. Flowers 4 inches; apricot shaded pink, base zoned scarlet; free, erect, on 4- to 12-inch stalks, well above foliage.

TILLY (Burrell).—3½ feet. Flowers 3 inches; pinkish-apricot, base tinged terra-cotta; free, erect, on 4- to 9-inch stalks, well above foliage.

Pale Rose.

FLORRIE (Unwin), H.C.—3½ feet. Flowers 4 to 4½ inches; pale amaranth-pink; free, erect, on 6- to 10-inch stalks, well above foliage.

LULU (Cobb).—3½ feet. Flowers 3 to 3½ inches; bright amaranth-pink, base zoned crimson; free, erect, on 4- to 9-inch stalks, at first hidden by foliage, afterwards above.

RUTH (Burrell), H.C.—4 feet. Flowers 4 inches; deep amaranth-pink, base shaded crimson; free, erect, on 6- to 15-inch stalks, well above foliage.

Rose.

IRMA (Burrell), A.M.—5 feet. Flowers 3½ inches; bright phlox-purple; base zoned crimson; free, erect, on 6- to 15-inch stalks, carried well above foliage.

ALICE (Burrell).—3 feet. Flowers 3½ inches, dull phlox-purple, base shaded crimson; fades; free, erect, on 6- to 12-inch stalks, well above foliage.

Rosy-magenta.

AIDA (Turner), H.C.—4 feet. Flowers 4 inches; dull pale rosy-magenta, base zoned deep crimson; free, erect, on 6- to 10-inch stalks, above foliage.

Scarlet and White.

EFFIE (Burrell).—5 feet. Flowers 4 inches diameter; white, broadly edged scarlet; free, erect, on 6- to 15-inch stalks, well above foliage.

Yellow and Red.

WANDA (Burrell), H.C.—3½ feet. Flowers 4 inches; lemon-yellow shaded terra-cotta towards tips and margins; free, erect, on 6- to 12-inch stalks, above foliage.

Scarlet.

TWINK (Burrell).—4 feet. Flowers 4 to 5 inches; pale scarlet; fades very much; petals channelled; free, stems erect, neck weak, on 4- to 12-inch stalks, above foliage.

ELATION (Burrell).—3½ feet. Flowers 3½ to 4 inches; dull scarlet, tips paler; free, erect, on 4- to 12-inch stalks, above foliage.

MRS. J. GODDARD (Cheal), A.M.—4 feet. Flowers 4 inches; bright scarlet; free, erect, on 4- to 9-inch stalks, above foliage. An improvement on 'Denys.'

ST. ANDREWS (Cobb).—3 feet. Flowers 3 inches; deep scarlet; petals channelled; free, somewhat drooping, on 4- to 9-inch stalks, above foliage.

Class VII. DWARF PÆONY-FLOWERED DAHLIAS.

Orange.

MRS. JOHN CROSSLING (Cobb).—22 to 24 inches. Flowers 3 to 3½ inches, bright orange; petals channelled; free, erect, on 4- to 8-inch stalks, well above foliage.

Orange-Scarlet.

CHARLES E. PEARSON (Cobb).—24 to 26 inches. Flowers 3½ inches; bright orange-scarlet; petals channelled; free, erect, on 6- to 10-inch stalks, well above foliage.

Scarlet.

HISTON GEM (Unwin).—22 inches. Flowers 3 to 3½ inches, bright scarlet; petals channelled; free, erect, on 4- to 8-inch stalks, well above foliage.

AUTUMN GLORY (Unwin).—26 to 28 inches. Flowers 3 to 4 inches, bright rich deep scarlet, base shaded orange; free, erect, on 4- to 10-inch stalks, well above foliage.

Maroon.

GIPSY MAID (Unwin).—22 inches. Flowers 3 inches; maroon; petals channelled; free, erect, on 4- to 8-inch stalks, well above foliage.

*Class VIII. DECORATIVE DAHLIAS.**AWARDS.*

Josephine Adair, A.M. September 7, 1927. Raised and sent by Messrs. J. Stredwick of Silverhill Park, St. Leonards.

W. D. Cartwright, A.M. September 7, 1927. Raised and sent by Messrs. J. Stredwick.

Freedom, A.M. September 7, 1927. Raised and sent by Messrs. Kroon of Baarn, Holland.

J. L. Crowther, A.M. September 7, 1927. Raised and sent by Messrs. J. Stredwick.

Clown, A.M. September 7, 1927. Raised by Messrs. Bruidegom and sent by Messrs. van der Kloot of Leiden, Holland.

Mrs. D. Hepburn, A.M. September 7, 1927. Raised and sent by Messrs. J. Cheal.

Rev. M. Herbert Lee, A.M. September 7, 1927. Raised and sent by Messrs. Stredwick.

Nego, A.M. September 7, 1927. Raised and sent by Messrs. J. G. Ballego of Leiden, Holland.

Fred Ransome, A.M. September 8, 1927. Raised and sent by Messrs. Stredwick [H.C. 1926].

Rose Tendre, H.C. September 7, 1927. Raised and sent by Messrs. H. Hornsveld of Baarn, Holland.

Yellow.

JOSEPHINE ADAIR (Stredwick), A.M.—5½ feet. Flowers 5 to 6 inches; bright lemon-yellow; rays flat; free, erect, on 6- to 12-inch stalks, above foliage.

Yellowish-buff.

W. D. CARTWRIGHT (Stredwick), A.M.—4½ feet. Flowers 6 to 7 inches; yellowish-buff, tips orange-yellow; rays flat, inner ray margins recurved; free, erect, on 6- to 9-inch stalks, well above foliage.

LOCARNO (Carlée).—5½ feet. Flowers 4½ to 5 inches; golden-buff; inner rays channelled; free, erect, on 9- to 18-inch stalks, well above foliage.

CORONACH (Jarman).—6½ feet. Flowers 5 to 6 inches; dull chrome-yellow shaded buff; margins of rays broadly recurved; free, erect, on 9- to 16-inch stalks, well above foliage.

Apricot.

FREEDOM (Kroon), A.M.—4½ feet. Flowers 6 inches; bright apricot on pale creamy-orange; free, erect, neck weak, on 9- to 15-inch stalks, well above foliage.

Pink on Yellow.

MRS. CROWLEY (Bourgondien).—4 feet. Flowers 5 to 6 inches; eosin-pink on lemon-yellow, base yellowish-buff; rays flat; free, erect, on 6- to 12-inch stalks, at first hidden by foliage, afterwards just above.

J. L. CROWTHER (Stredwick), A.M.—5 feet. Flowers 5 to 6½ inches; dull amaranth-pink on lemon-yellow; rays flat; free, erect, on 9- to 16-inch stalks, above foliage.

WEALTHY (Kroon).—4½ feet. Flowers 5 inches; bright rosy-red on yellow; rays channelled; free, erect, on 9- to 12-inch stalks, at first hidden by foliage, afterwards just above.

Rose-pink.

ROSE TENDRE (Hornsveld), H.C.—4½ feet. Flowers 4 to 5 inches, pale clear rose-pink; rays channelled; free, erect, on 9- to 15-inch stalks, above foliage.

THOS. HAY, V.M.H. (Stredwick).—4½ feet. Flowers 6 to 7 inches; pale amaranth-pink; rays channelled; free, erect, on 9- to 15-inch stalks, well above foliage.

HYDE PARK BEAUTY (Stredwick).—5½ feet. Flowers 5 to 5½ inches; rich amaranth-pink, rays with margins recurved, neck weak free, erect, on 12- to 18-inch stalks, well above foliage.

DAILY MIRROR (Stredwick).—6½ feet. Flowers 6 to 7 inches; nearly of the Cactus type; rich phlox-purple, centre white; free, erect, on 6- to 12-inch stalks, hidden by foliage.

Magenta.

BETSY MAJOR (Majoor).—4½ feet. Flowers 4 to 5 inches; bright magenta; rays flat; free, erect, on 6- to 12-inch stalks, above foliage.

Red and White.

EARLE WILLIAMS (Bourgendien).—4 feet. Flowers 5 inches, deep scarlet broadly tipped white, rays flat; free, erect, on 6- to 14-inch stalks, at first hidden by foliage, afterwards just above.

CLOWN (van der Kloot), **A.M.**.—4 feet. Flowers 4 to 5 inches, bright pale vermilion broadly tipped white, inner rays channelled, outer flat; free, erect, on 9- to 14-inch stalks, above foliage.

Red and Yellow.

FALSTAFF (Jarman).—4 feet. Flowers 5 to 5½ inches diameter, pale vermilion, tips shaded pale lemon-yellow; free, erect, neck weak, on 9- to 12-inch stalks, at first hidden by foliage, afterwards above.

RAPALLO (Ballego).—4 feet. Flowers 4 to 4½ inches, dull crimson, base and tips of petals lemon-yellow, rays few, flat; free, erect, on 8- to 12-inch stalks, at first hidden by foliage, afterwards above.

Scarlet.

MRS. D. HEPBURN (Cheal), **A.M.**.—5 feet. Flowers 5 to 6 inches, rich scarlet; inner rays channelled, outer flat; free, erect, on 6- to 14-inch stalks, well above foliage.

MRS. D. LUSCOMBE (Cheal).—5 feet. Flowers 5 inches, bright scarlet; free, erect, on 9- to 15-inch stalks, just above foliage.

Maroon.

REV. M. HERBERT LEE (Stredwick), **A.M.**.—5½ feet. Flowers 5 inches, rich reddish-maroon, inner rays channelled, outer flat; stems stiff; free, erect, on 9- to 15-inch stalks, well above foliage.

NEGO (Ballego), **A.M.**.—5½ feet. Flowers 5 to 6½ inches, maroon, inner rays channelled, outer flat; free, erect, on 9- to 15-inch stalks, above foliage.

ROSA TAYLOR (Stredwick).—5½ feet. Flowers 5 to 6½ inches, maroon, inner rays margins recurved, outer flat; free, erect, on 6- to 12-inch stalks, above foliage.

FRED RANSOME (Stredwick), **A.M.**.—See JOURNAL R.H.S., 51, p. 141. Much like 'Rosa Taylor' in colour.

Class IX. SMALL-FLOWERED DECORATIVE DAHLIAS.

Scarlet and Yellow.

COULSDON (Cheal).—5 feet. Flowers 4 inches, bright scarlet, margins and tips lemon-yellow, margins recurved; free, erect, on 9- to 15-inch stalks, well above foliage.

Scarlet.

CHEERFUL (Cheal).—5 feet. Flowers 4 inches, rich scarlet, rays flat; free, erect, on 9- to 16-inch stalks, well above foliage.

Class XII. POMPON DAHLIAS.

Pink on Yellow.

MURREN (Cheal).—5 feet. Flowers 2½ to 2¾ inches, dull pale amaranth-pink on pale yellow; free, erect, at first hidden by foliage, afterwards just above

Scarlet.

NIGGER (Jarman).—4 feet. Flowers 2½ to 2¾ inches, deep scarlet; fades; many open centred; free, erect, partially hidden by foliage, on 6- to 10-inch stems.

Class XIV. STAR DAHLIAS.

AWARD.

Burford Star, H.C. September 7, 1927. Raised and sent by Messrs. J. Cheal.

Pink on Yellow.

CAPEL STAR (Cheal).—3½ feet. Flowers 3 to 3½ inches, pale amaranth-pink, base lemon; free, erect, on 9- to 16-inch stalks, well above foliage.

Orange-scarlet.

EPSOM STAR (Cheal).—4 feet. Flowers 3 to 3½ inches, orange-scarlet; free, erect, on 9- to 15-inch stalks, above foliage.

BURFORD STAR (Cheal), H.C.—5 feet. Flowers 3 to 3½ inches, orange-scarlet; free, erect, on 9- to 12-inch stalks, well above foliage.

Class XV. CACTUS DAHLIAS.

AWARDS.

Giant Kriemhilde, A.M. September 7, 1927. Raised and sent by Messrs. J. G. Ballego.

La France, H.C. September 7, 1927. Raised and sent by Messrs. Bruidegom of Baarn, Holland.

Pink Favourite, H.C. September 7, 1927. Raised and sent by Messrs. Bruidegom.

White.

MANNEQUIN (Stredwick).—6 feet. Flowers 5 inches, white, tips pale sulphur; free, erect, on 9- to 12-inch stalks, hidden by foliage.

Yellow.

MARY SEGAR (Stredwick).—6½ feet. Flowers 6 to 7 inches, pale lemon-yellow; free, drooping, on 9- to 12-inch stalks, hidden by foliage.

Pink and Yellow.

THOS. WANT (Stredwick).—5 feet. Flowers 6 to 7 inches, pale creamy-pink shading to pale lemon at base; free, erect, neck weak, on 6- to 12-inch stalks, at first hidden by foliage, afterwards above.

RONNIE (Shoesmith).—5 feet. Flowers 5 inches, bright pale amaranth-pink, base pale lemon; free, stems erect, neck weak, on 6- to 14-inch stalks, at first hidden by foliage, afterwards above.

LA FRANCE (Bruidegom), H.C.—See JOURNAL R.H.S., 52, p. 96.

Pink.

GIANT KRIEMHILDE (Ballego), A.M.—5 feet. Flowers 5 to 6 inches, bright amaranth-pink, centre cream; free, erect, on 9- to 14-inch stalks, above foliage.

PEACH BLOSSOM (Shoesmith).—5 feet. Flowers 4 to 5 inches, amaranth-pink self; free, erect, on 9- to 14-inch stalks, just above foliage.

PINK FAVOURITE (Bruidegom), H.C.—See JOURNAL R.H.S., 52, p. 96. Petals broadly quilled.

Coral Red.

TROPHY (Stredwick).—6 to 7 feet. Flowers 5 to 6 inches, bright coral-red self; free, erect, on 9- to 15-inch stalks, at first hidden by foliage, afterwards above.

Purple.

ROYAL PURPLE (Shoesmith).—5 feet. Flowers 5 inches, pale magenta self; free, erect, on 6- to 12-inch stalks, hidden by foliage.

PURPERKONING (Bruidegom).—5 feet. Flowers 5 to 6½ inches, bright Bishop's purple, rays broadly quilled; free, neck weak, on 6- to 9-inch stalks, above foliage.

PARSLEY TRIED AT WISLEY, 1927.

FIFTY-ONE stocks of Parsley were sent to Wisley for trial in 1927, and all were sown on the new vegetable trial ground (which had been deeply dug and well manured) on April 12, 1927. Good growth was made by practically all stocks, and the trial was inspected during growth and finally judged on September 9, 1927, the judges' recommendations being given below.

Some of the stocks still require further selection in order to eliminate rogues, and especially plants of the plain-leaved type.

The arrangement followed in the trial and in the following notes was that adopted in our JOURNAL, vol. 46, p. 395.

AWARDS, DESCRIPTIONS AND NOTES.

Leaves double moss-curved.

AWARDS.

Green Gem, A.M. September 9, 1927. Raised and sent by Messrs. Hurst of Hound-ditch, E.

Giant Curled, A.M. September 9, 1927. Sent by Messrs. E. Webb of Wordsley, Stourbridge.

Perennial Moss Curled, A.M. September 9, 1927. Introduced and sent by Messrs. Watkins & Simpson of Drury Lane, Covent Garden, W.C. [F.C.C. 1919].

Exquisite Garnishing, A.M. September 9, 1927. Sent by Messrs. E. Webb.

Defiance Prize Moss Curled, H.C. September 9, 1927. Raised and sent by Messrs. Storrie & Storrie of Glencarse, Perthshire.

EXQUISITE GARNISHING (Webb), A.M.—Plant dwarf, of very compact habit; leaves dark emerald green; stalks short. Crop good.

GREEN GEM (Hurst), A.M.—Plant dwarf, of very compact habit; leaves very dark dull emerald-green; stalks short. Crop very good.

GIANT CURLED (Webb), A.M.—Plant of medium height; leaves bright emerald-green; stalks of medium length. Crop very good; a good even stock.

DEFIANCE PRIZE MOSS CURLED (Storrie & Storrie), H.C.—Plant of medium height; leaves bright emerald-green; stalks short. A good even stock.

PERENNIAL MOSS CURLED (Watkins & Simpson), A.M.—See JOURNAL R.H.S., vol. 46, p. 396. A good true even stock.

FERNLEAVED (Daehnfeldt & Jensen).—Leaves double moss-curved.

Leaves moss-curved (less curved than foregoing).

AWARDS.

Perfection Moss Curled, A.M. September 9, 1927. Introduced and sent by Messrs. Barr of King Street, Covent Garden, W.C. [A.M. 1919].

Myatt's Garnishing, A.M. September 9, 1927. Sent by Messrs. R. Veitch of Exeter.

Exhibition, A.M. September 9, 1927. Sent by Messrs. Dobbie of Edinburgh.

Champion Moss Curled, H.C. September 9, 1927. Raised and sent by Messrs. Dobbie.

Extra Curled, H.C. September 9, 1927. Sent by Messrs. Dobbie, and also by Messrs. Ireland & Hitchcock of Marks Tey, Essex, as 'Mascott's Strain.' This shares the award.

Dwarf Perfection, C. September 9, 1927. Sent by Messrs. Cooper-Taber of Southwark Street, S.E.

EXTRA CURLED (Dobbie), H.C.—Plant of medium height; leaves bright emerald green; stalks of medium length. Crop good. Distinct from the stock sent under this name by Messrs. Clucas.

MASCOTT'S STRAIN (Ireland & Hitchcock), **H.C.**—Characters as 'Extra Curled.'
DWARF PERFECTION (Cooper-Taber), **C.**—Of 'Extra Curled' type.

DWARF PERFECTION (Barr, Heinemann).—Stocks irregular in height and contained plain-leaved rogues.

PRIDE OF THE KITCHEN (Heinemann).—Of 'Extra Curled' type. A mixed stock.

CHAMPION MOSS CURLED (Dobbie), **H.C.**—See JOURNAL R.H.S., vol. 46, p. 396. A good even stock. Distinct from the other stocks sent under this name.

SUPERB DWARF GARNISHING (Hurst)
SUPERB GARNISHING IMPROVED (W. H. Simpson) }.—Of 'Champion Moss Curled' type. Stocks contained plain-leaved rogues.

CURLED WONDER (Zwaan & van der Molen).—Of 'Extra Curled' type; the leaves when old have a tendency to become coarse.

CURLYHEAD (Zwaan & de Wiljes).—Characters as 'Curled Wonder.' Contained plain-leaved rogues.

PRIVETAKER (Zwaan & van der Molen).—Much like 'Curled Wonder,' but leaves less finely cut, with a tendency to lose the curled effect when old.

PERFECTION MOSS CURLED (Barr), **A.M.**—Plant tall; leaves bright emerald green; stalks of medium length; crop very good.

EXHIBITION (Dobbie), **A.M.**—Plant of medium height, leaves bright dull emerald green; stalks of medium length; crop very good. Distinct from the variety sent under this name by Messrs. Stuart & Mein.

MYATT'S GARNISHING (R. Veitch), **A.M.**—Plant tall; leaves bright emerald green; stalks of medium length; crop very good. Distinct from the stock sent under this name by Messrs. Dawkins.

Leaves double curled.

AWARDS.

Champion Moss Curled, **A.M.** September 9, 1927. Sent by Messrs. Nutting of Southwark Street, S.E.

Supreme, **H.C.** September 9, 1927. Raised and sent by Mr. J. Brown of Daglingworth Manor, Cirencester.

Extra Curled, **H.C.** September 9, 1927. Introduced and sent by Messrs. Clucas of Ormskirk, Lancs.

Fine Curled, **C.** September 9, 1927. Introduced and sent by Zaaizaad-vereening 'Nunhem' of Nunhem, Limburg, Holland.

CHAMPION MOSS CURLED (Nutting), **A.M.**—Plant tall; leaves dark emerald green; stalks medium to long; crop very good. A good even stock.

CHAMPION MOSS CURLED (Cooper-Taber, Speed, Zwaan & van der Molen).—Characters as foregoing, but stocks contained plain-leaved rogues.

EXTRA CURLED (Olsen).—Near 'Champion Moss Curled' type.

MOSS CURLED (Dawkins, Ireland & Hitchcock).—Of 'Champion Moss Curled' type, but leaves of a paler and brighter shade of green.

MOSS CURLED (Cullen)

DARK GREEN MOSS CURLED (Johnson) }.—Of 'Champion Moss Curled' type, but with somewhat paler leaves, yet a darker green than the preceding 'Moss Curled.'

DOUBLE CURLED (Daehnfeldt & Jensen).—Of 'Dark Green Moss Curled' type, with coarse and less divided foliaged rogues.

SUPREME (Brown), **H.C.**—A good even stock of 'Dark Green Moss Curled' type, but with leaves of a brighter shade of green.

EXHIBITION (Stuart & Mein).—Of 'Dark Green Moss Curled' type. Stock contained plain coarse-leaved rogues.

EXTRA FINE CURLED (W. H. Simpson, Cullen).—Of 'Dark Green Moss Curled' type; the first stock contained plain-leaved rogues, the second was good and even.

EXTRA CURLED (Clucas), **H.C.**—Plant tall; leaves bright emerald green; stalks medium to long. Crop good.

EXTRA FINE GARNISHING (Barr).—A variable stock.

FINE CURLED (Zaaizaadvereening 'Nunhem'), **C.**—Plant tall; leaves dark emerald green; stalks medium to long; crop good.

COVENT GARDEN MOSS CURLED (Barr).—Much like 'Fine Curled.'

SPLENDID CURLED (R. Veitch).—Much like 'Fine Curled.'

EXQUISITE (Cooper-Taber).—Of 'Fine Curled' type, except that the foliage is somewhat more curled.

MYATT'S GARNISHING (Dawkins).—Of 'Fine Curled' type; stock variable.
 CRESTED GEM (Kelway).—See JOURNAL R.H.S., vol. 46, p. 396. Stock
 contained plain and coarse foliated plants.

Leaves fern-leaved.

AWARDS.

Fern-leaved, H.C. September 9, 1927. Sent by Messrs. Watkins & Simpson.
 [H.C. 1919].

FERN-LEAVED (Watkins & Simpson), H.C.—See JOURNAL R.H.S., vol. 46,
 p. 397. A good even stock.

FERN-LEAVED (W. H. Simpson, Storrie & Storrie, Cooper-Taber, Cullen).—
 Less good stocks of the last.

GARNISHING (Daehnfeldt & Jensen).—A variable stock of the 'Fern-leaved'
 type.

PERFECTA (Johnson).—Of 'Fern-leaved' type, containing coarse and less
 divided foliated rogues.

Leaves plain.

ITALIAN LARGE (Herb).—Plant very tall; leaves broadly divided, dark dull
 green; stalks long; crop good. 85 per cent. bolters.

SWEET CORN AT WISLEY, 1927.

FORTY-NINE stocks of seed of sweet corn were sent to Wisley for trial in 1927, representing 30 varieties. They were sown on well-manured, deeply dug ground on May 24, where they were to grow, as this method of cultivation has been found preferable to that of sowing in pots for subsequent transplanting. The rows were $2\frac{1}{2}$ feet apart and the plants thinned to 2 feet apart in the rows.

The growing plants were inspected during the season by the Judging Committee, and finally judged on September 9, this being a date at which it may be assumed that varieties then mature may be expected to mature in any but an abnormally cold season. The present season did not give any really hot weather, but on the contrary there were many cold nights and much wet.

Eight varieties reached maturity in early September, viz. 'Banting Strain' and 'Pickaninny' from the Central Experimental Farm, Ottawa, Canada; 'Extra Early Purity' from Messrs. Cooper-Taber and from Mr. Dawkins; 'The Burpee' from Messrs. W. Atlee Burpee of Philadelphia, U.S.A.; and four from Mr. Evans Jackson of North Bay, Ontario, Canada, viz. 'Pink,' 'Yellow,' 'Extra Extra Early,' and 'Golden Bantam.' The last was distinctly earlier than another strain sent under this name.

Eight other varieties matured before October 10, 1927, but the remaining fourteen did not mature sufficiently to give a crop, though leaf growth was good. The names and sources of these fourteen follow and are not further referred to in the notes.

'Black Mexican' (Barr); 'Country Gentleman' (Barr); 'Delicious' (Burpee); 'Earliest Catawba' (Barr); 'Early Kendall's Giant' (Watkins & Simpson); 'Evergreen' (R. Veitch); 'White Evergreen' (Carter); 'Golden Cream' (Dobbie); 'Golden Giant' (Carter); 'Golden Rod' (R. Veitch); 'Howling Mob' (Carter, Burpee, Barr); 'Late Mammoth' (R. Veitch); 'Metropolitan' (R. Veitch); 'Sunnybrook' (Burpee).

AWARDS, DESCRIPTIONS AND NOTES.

A. 2 to 3 feet.

Seeds white (when ripe).

AWARDS.

Extra Early Purity, H.C. September 9, 1927. Introduced by Messrs. Cooper-Taber of Southwark Street, S.E., and sent by them and Messrs. Dawkins of King Road, Chelsea.

Extra Extra Early, H.C. September 9, 1927. Raised and sent by Mr. Evans Jackson of North Bay, Ontario, Canada.

Banting Strain, C. September 9, 1927. Raised and sent by the Central Experimental Farm, Ottawa, Canada.

BANTING STRAIN (Central Experimental Farm), C.—Height 28 inches; plant not branched; cobs 5 inches long, 3 per plant, borne at the base; grains pale cream, some tinged bluish; flavour good and sweet. Suitable for planting 15 inches apart. Ready September 7.

PICKANINNY (Central Experimental Farm).—Character as 'Banting Strain' but grains white, many tinged bluish. Stock variable. Ready September 7.

EXTRA EARLY PURITY (Cooper-Taber, Dawkins), H.C.—Height 30 to 36 inches; plant not branched, very compact, cobs 6 to 7 inches long, borne at the base, 3 per plant; grains white; flavour good, sweet and milky. Suitable for planting 15 inches apart. Ready September 2.

EXTRA EXTRA EARLY (Evans Jackson), H.C.—Height 3 feet; plant not branched; cobs 6 to 7 inches, 3 per plant, borne at the base; grains pearly-white; flavour somewhat mealy. Suitable for planting 18 inches apart. Ready September 8.

B. 8 to 4½ feet.

AWARDS.

The Burpee, A.M. September 9, 1927. Raised and sent by Messrs. W. Atlee Burpee of Philadelphia, U.S.A.

Golden Bantam, C. September 9, 1927. Sent by Mr. Evans Jackson.

Seeds white.

CUPID (R. Veitch).—Height 3½ feet; plant little branched; cobs 4 to 5 inches long, 2 per plant, borne at the base; grains pale cream; flavour fair. Foliage variable, some plants with red tinged stems. Ready October 3.

Seeds cream.

EXTRA EARLY PREMO (Watkins & Simpson, W. H. Simpson, Barr).—Height 4 feet; plant much branched; cobs 6 to 7 inches long, 3 per plant, borne at the base; grains white; flavour good, very sweet. Ready October 8. The third stock was very mixed.

PEEP O' DAY (Watkins & Simpson, Dawkins).—Height 4 feet; plant much branched; cobs 5 inches long, 3 per plant, borne at the base; grains pale creamy-white; flavour fairly good. Ready October 3.

Seeds yellow.

THE BURPEE (Burpee), A.M.—Height 3½ feet; plant little branched; cobs 6 to 7 inches long, 4 per plant, borne at the base; grains pale cream; flavour good, sweet and milky. An earlier and improved form of 'Golden Bantam.' Suitable for planting 18 inches apart in the rows. Ready September 5.

YELLOW (Evans Jackson).—Height 4½ feet; plant much branched; cobs 6 to 7 inches long, 4 or 5 per plant, borne at the base; grains pale cream; flavour fair. Ready September 9.

GOLDEN BANTAM (Evans Jackson), C.—Height 4½ feet; plant much branched; cobs 6 to 8 inches long, 4 per plant, borne near the base; grains pale cream; flavour good and sweet. Ready September 9. An early selected stock.

GOLDEN BANTAM (Watkins & Simpson, Carter, Burpee, R. Veitch, Cullen, Barr, Dobbie, Dawkins).—Characters as for above 'Golden Bantam,' but less early stocks. Ready October 3.

C. Above 4½ feet.

AWARD.

Pink, H.C. September 9, 1927. Raised and sent by Mr. Evans Jackson.

Seeds cream.

UNCLE SAM (R. Veitch).—Height 5 feet; plant much branched; cobs 5 to 6 inches long, 3 or 4 per plant, borne near the base; grains pale creamy-white; flavour good, sweet and milky. Ready October 3.

EARLY FORDHOOK (Burpee, Carter).—Height 5 to 6 feet; plant much branched; cobs 6 inches long, 2 or 3 per plant, borne near the base; grains pale creamy-white; flavour good, milky and somewhat sweet. Ready October 3. Stocks not quite true.

EARLY SWEET MINNESOTA (Watkins & Simpson, Dawkins, W. H. Simpson).—Height 6 to 7 feet; plant much branched; nodes reddish; cobs 6 to 8 inches long, 4 per plant, borne at the centre; grains pale creamy-white; flavour good, sweet and milky. Ready October 4.

EARLY SWEET CORY (Watkins & Simpson)

CORY (Barr)

EARLY WHITE CORY (Dobbie)

}.—Height 6 to 7 feet, plant much

branched; stems tinged reddish; cobs 6 to 7 inches long, 3 or 4 per plant, borne near the base; grains pearly-white; flavour fair, somewhat watery. Ready October 6.

Seeds yellow, tinged pink.

PINK (Evans Jackson), H.C.—Height 5 feet, plant much branched; cobs 6 to 7 inches long, 4 per plant, borne above base; grains pale cream; flavour fair. Ready September 9.

BOOK REVIEWS.

"The Life and Work of an English Landscape Architect: an Autobiography." By Thomas H. Mawson, F.L.S. La. 8vo. 368 pp. (The Richards Press [1927], London.) 25s.

Taste and aim in landscape gardening in the twentieth century differ widely from those which prevailed in the eighteenth. A century and a half ago much of our country, especially in Northern England and Scotland, was still rough moorland, and landowners desired that verdant pasture, smooth lawns, and formal architecture should present in their demesnes the utmost contrast to the surrounding wilderness. A notable instance of this comes to mind in a certain Scottish park well known to us. It was laid out by "Capability" Brown (1715-1783), who succeeded in ridding the ground of brown heather and scattered boulders and bringing it as near as might be to the model of Hyde Park. About a third of a mile in front of the mansion ran a brawling stream, which was duly harnessed by dams and banks into the semblance of a canal. Beyond it rose a rugged hill; it was easy to blot out its heath-clad slopes by planting—all but a great grey crag, which defied concealment. It is recorded that Mr. Brown urged that this should be painted grass-green to make it look like a glade in the wood that was to rise, and has risen, around it! Luckily the proposed camouflage was not carried into effect; the grand rock face remains unveiled, a delightful feature in the landscape.

Mr. Thomas Mawson, whose strenuous and successful life is described in the ample autobiography before us, has had different conditions to encounter and control. A general reaction against formality in pleasure-grounds has too often led to the dumping of rockeries and such-like structures wholly incongruous with their environment.

"What I have said," writes Mr. Mawson, "about the craze for the creation of wildernesses is not by any means in disparagement of rationally designed and placed informal or wild gardening, such as that which is directly associated with rock-work, nor as discrediting rock-building even on a large scale. Nor have I any aversion to natural picturesque wildness when it is there on the site originally, or whenever the nature of the site or the materials to hand justify it. . . . What I do dissociate myself from is the importation of tons of stone from Yorkshire and Derbyshire in order to build rock-gardens in districts absolutely devoid of the natural product . . . this . . . applies especially, say, to a rock-garden composed of thousands of tons of Yorkshire grit and stone transferred to the lush lowlands of the Thames valley" (p. 93).

Here the allusion is obviously to the enterprise of a well-known enthusiast, now no more. It may be argued *per contra* that a private

owner is entitled to carry out his whims in a garden created for his personal delectation.

Born sixty-six years ago in a Lancashire village, Thomas Mawson, whose father was a builder, conceived in very early boyhood a strong inclination for architecture, acquiring later a taste for horticulture as the result of his father setting up as a market-gardener near Ingleton. This venture ended in financial failure; within two years the father died, the maintenance of the widow and three younger children devolving upon Thomas, at that time aged eighteen. He faced life with a resolute front, his first employment being in London with John Wills, a landscape gardener of good repute, at wages of 18s. a week. Soon after he found employment for his two brothers at a market-garden in Roehampton, where they were paid 14s. and 12s. a week respectively. Straightway Thomas wrote to summon his mother and sister to London, where this family of five set up house, afterwards moving to Putney, on a weekly income of £2 4s., the joint earnings of the three brothers.

"Looking back," notes the author, "I am amazed at my mother's thrift during those difficult days, at the perfect control she exercised over us boys, and the tact with which she inspired us to reach our utmost possibilities" (p. 13).

Young Mawson had served a couple of years under Wills, acquiring practical knowledge for the profession on which he had set his heart, when things went wrong in the business and it went into liquidation. He obtained employment successively with the well-known firms of Kelway & Son of Langport and Ware of Tottenham. The latter was in those days a very extensive business, Amos Perry being the manager, and Mawson proved himself so capable an assistant that he was offered a junior partnership. This he declined, because, having set his heart on landscape gardening, there was no scope at Tottenham for that craft. Instead of availing himself of this promising opening, he fell in love and married a charming young nurse in Tottenham Hospital; a bold step at three-and-twenty, to be followed by one still bolder. While spending a brief honeymoon among the English lakes, Mawson thought he saw there a likely district for a landscape gardener, and in January 1885 he started in that profession at Windermere. He brought his mother and two brothers (his sister had been married) down to join in this new enterprise, he proposing to lay out parks and gardens, while his brothers established a nursery to furnish material for carrying out his designs. Fortune frowned throughout the first two anxious years; but suddenly she smiled through the agency of Mrs. Arthur Severn, who introduced Mawson to a wealthy gentleman who had just finished building a house on the west shore of Windermere and wanted the grounds laid out, regardless of expense.

"At this stage there happened one of those incidents which bind men together and make even sceptics believe in the principles of altruism. We started work on Monday, and on the Wednesday following Mr. Bridson asked me to go to his private business room for a chat.

When I got there he said : ' Well, Mr. Mawson, I am a business man, and I, like every other business man, have experienced times when I was glad to see a cheque. As you are just starting business, it has occurred to me that you would not mind if I give you a cheque for £200 on the work. If you want more, let me know ! ' That cheque was a godsend, and its moral value was far greater than its exchange value. It showed that I had won the confidence of my first client " (p. 22).

Thus was the critical corner turned. The narrative thereafter becomes a long chronicle of profitable work chequered with very few disappointments. The author describes all his engagements in minute detail, referring to one of them somewhat grandiloquently as a " rung in the ladder of fame of which I had always dreamed " (p. 39). His first considerable private work was laying out the park and gardens at Graythwaite Hall, and a long series of urban planning began with a scheme for the embellishment of the pottery town of Hanley at a cost of £25,000—" an estimate which was subsequently considerably increased owing to additional works undertaken on my recommendation." It is indeed remarkable that Mr. Mawson's active career, which included much work executed in the United States, should have closed with an engagement by King Constantine of Greece for the improvement and beautifying of Athens—the very shrine of noble architecture. M. Venizelos was Prime Minister at the time, and told him that " Modern Athens and the surrounding centres of interest must be beautiful, attractive, and recuperative to body and mind as was ancient Athens." Mr. Mawson worked vigorously to fulfil this demand, preparing extensive schemes of reconstruction and extension ; but the Great War interfered with their execution, and the resulting depreciation of Greek currency involved him in a loss of £700 in his remuneration.

The book would have benefited by condensation. Readers will not find interest in long lists of lectures delivered in America, still less in extracts from Press notices of the author's other books. Some French writer has exclaimed "*Le moi est haïssable*," and English literature differs from that of all other nations in the use of a capital letter for the first person singular. This is a serious snare in the path of an autobiographer, and Mr. Mawson has been at no pains to avoid it. A moderate exercise of literary ingenuity would have served to avert the suggestion of egotism by cutting out 50 per cent. of the " I's " with which his pages are so plentifully peppered. There are numerous illustrations, several of which are interesting.

" The Harvest of the Years, being the Autobiography of Luther Burbank." Edited by Wilbur Hall. (Constable, London.) 18s.

The great work which plant breeders have done in the past has been mainly of European origin, but from across the Atlantic one name has reached the ears of that larger public which is not especially interested in Horticulture, and it is that of Luther Burbank.

Such books as have so far been published on his work have been written by devoted admirers or visiting scientists, and from them little of value could be extracted. But an autobiography arouses fresh interest in the much advertised "Wizard of Horticulture." What were his methods and his results? Was he the charlatan which at first sight he appears to European eyes, with his band of loud-voiced disciples? Such questions have long been asked in Europe, and the present volume is opened with a sincere desire to find an answer to such questions.

The editor, Wilbur Hall, has taken down Burbank's life story, his opinions, and some details of his work, but we confess that the rôle of the candid friend he has adopted has done little service to the memory of the "master."

The sceptic will ask how far were his "creations" actually produced by him, and how many were merely introductions from other countries, whose "novelty" was merely due to their "outlandish" nature.

Let us take as an instance the "Japanese" Plums with which Burbank's name is associated.

In a letter to Prof. Hedrick, quoted in the "Plums of New York," Burbank stated that the best known of the Japanese Plums, named 'Burbank,' was introduced from Japan as a "pit" (or stone) in 1883. In the work before us a different account is given, and we learn that Mr. Isaac Bunting sent *trees* of Japanese Plums in 1885, and from these the varieties 'Burbank' and 'Satsuma' were introduced in 1889. 'Satsuma' proved to be a Japanese variety, 'Beni Smono,' and the variety 'Burbank' was considered by some, though not all, authorities to be a synonym of 'Wassu,' another Japanese or Chinese variety. Burbank's own words are as follows:

"These twelve plum seedlings (*sic*) from Japan were the foundation stones on which I built my Plum experiments. Two of them came out so well and were so great an improvement, not only on our home plums and on European varieties, *but on Japanese varieties that were related to them* (our italics), that I had them put on the market in 1889, four years after they had landed in San Francisco."

Now as Burbank had not visited Japan or China, and as the trees in question produced the first fruit of this race of plums which he had seen, how could he know that they were an improvement on "the Japanese varieties related to them"? By his constant reference to these plums as "seedlings," which they were not, and his vague remarks as to what happened between their importation in 1885 and introduction in 1889—"I gave them a college education"—it seems to us quite certain that he did nothing more than propagate the Japanese varieties and introduce them as his own "creations."

It is not unfair to state that most of his so-called "experiments" consisted in raising large numbers of seedlings, crossing, on his own admission, without any precaution as to the exclusion of insects and

foreign pollen ; and from this unknown admixture something interesting turned up from time to time as it will in nearly every large batch of seedlings and crosses.

The serious horticultural worker in America knows and rightly estimates Burbank's work, and he is usually credited with having aroused great interest in the matter of plant breeding. It is true he has brought it into the ambit of the daily Press, but whether this is a service, or the reverse, is debatable.

There is nothing, therefore, in this book for the geneticist or the plant breeder to learn, unless he should have a taste for the byways of psychology, and in this respect it is a very interesting document.

Fired by Darwin's "Animals and Plants under Domestication" we see the young Burbank raising his seedlings in obscurity and poverty. We see him swept into publicity as the "Wizard of the West" by those who were even more ignorant than himself ; the world-wide fame, the letters from unknown admirers, many of which are touchingly published in this volume. And so into old age, a rather pathetic figure, a little abashed by the legend created around him, talking of man's improvement by breeding, discussing evolution in ignorance of the discoveries of the last fifty years, and finally taking a hand in the Fundamentalist controversy and emerging therefrom dazed and shaken by the storm. What a story Upton Sinclair would have made of this !

"Garten u. Haus." I. Das Haus in der Landschaft. By Heinrich Fr. Wiepking-Jürgensmann. 4to 139 pp. (Gartenschönheit, Akazien-Allee 14, Berlin-Westend.) Price in paper is M. 6, in half-linen M. 7, and in whole-linen M. 8.

This masterly book on landscape gardening of 140 pages containing 141 beautiful pictures, engravings, and plans, printed on pleasingly tinted art paper should be added to the library of every garden lover.

The author writes as a practical man who has successfully laid out countless gardens with consummate artistic skill and not as a mere theorist who is able to juggle with words. Numerous examples of various gardens are described and explained in their relationship to the landscape in which they are laid and to the house which they adorn. He sees in the garden the salvation of humanity from the demoralizing effects of intensive industrialism. While the love of the garden persists humanity is safe.

The value of beautiful trees planted with restraint is emphasized. All the photographs are admirable and the plans easily comprehended.

Of all the gardens described that of Professor Buning in Havellande pleased us most. Here is a veritable garden of unbounded repose and delight, intensified in interest and charm by the rare migratory birds which make the garden a sanctuary when the Arctic winters drive them southwards. Beautiful gardens of various types existing in Germany are ably described under three headings—the castle, manor-house, and country-house.

Every serious student of landscape gardening should study the book.

"Plants of New Zealand." By R. M. Lang, B.Sc., F.N.Z.Inst. E. W. Blackwell. 3rd Edition, revised and enlarged. 8vo. 468 pp. (Whitcombe & Tombs, Auckland, etc. ; Humphrey Milford, London, 1927.) 18s. net.

The third edition of this book should be particularly welcome to all lovers of New Zealand plants. It contains many valuable additions to the previous edition which was published twenty years ago.

It gives in a concise form good descriptions of many of the most interesting New Zealand plants, without having to search through the more complete works that have been published on this subject.

The illustrations are excellent, and give examples of some of the more important trees in their mature state and as grown in their native habitat, e.g.

Dacrydium cupressinum (The Rimer), fig. 15, *Nothofagus*, fig. 42, and *Metrosideros lucida*, fig. 100.

These trees, though flourishing in many gardens in this country, are as yet in a comparatively young state, and it is therefore interesting to see what they may become when they reach maturity.

Many New Zealand trees are perfectly hardy in the milder parts of the British Isles, and there are perhaps very many more which, although somewhat tender, might be planted with success if care be taken not to plant them in the open ground until they have made some hard wood.

A book of this description cannot fail to create a greater interest in the New Zealand flora, and is helpful in that it gives a good idea of what are the best plants to grow and the position in which they should be planted.

"A Treatise on Viticulture." By A. I. Perold. 696 pp. 8vo. (Macmillan & Co., London, 1927.) 25s.

In this exhaustive work every phase of grape growing, from both a theoretical and practical viewpoint, is dealt with in a very thorough manner.

Addressed particularly to readers in California, Australia, and South Africa—in which countries and on the Continent the cultivation of vineyards is an important industry—the book is intended to serve both the student and practical grower. This purpose it fulfils admirably.

The chapters dealing with the biology and morphology of the vine will be of special interest to students of horticulture, and in the pages devoted to such operations as propagation, pruning, and manuring, etc., the practical grower will find a vast amount of helpful information; though for the most part this information is not applicable to conditions in this country where grapes are grown almost entirely under glass.

After dealing very fully with the origin of grape growing and the geographical distribution of the vine the author describes and figures every part of the vine in great detail. A classification of the numerous species and varieties follows, with descriptions of all varieties in cultivation, with synonyms—usually many.

Most vineyards now consist of grafted vines—namely, *Vitis vinifera* varieties grafted on to American stocks—and propagation by cuttings is now limited almost exclusively to the raising of American stocks, European varieties on their own roots being very susceptible to the Phylloxera pest, to which American stocks are resistant.

The methods of grafting described are (1) by approach or Siamese grafting (after the Siamese twins); (2) tongue and cleft grafting; (3) by budding.

In the chapter on the theory of grafting the author discusses the influence of grafting on the life of the vine, susceptibility to diseases and pests, and upon fruitfulness.

The Phylloxera pest is fully described and admirably figured in the lengthy chapter on diseases, the most generally satisfactory method of evading this in the vineyards being to graft on to resistant stocks. Having defined the term disease as "a deviation from the plant's normal life which is harmful either to the object of the plant itself or to the object for which it is grown," the author describes, under the heading of "Vine Diseases," not only fungus diseases and insect pests, but non-parasitic or physiological diseases, due to climatic or soil conditions.

The winter and summer pruning and the training of the vine are given a special chapter and are followed by accounts of the production and sale of grapes for export and home consumption, and the preparation of wines, syrups, sultanas, raisins, and currants.

A bibliography of works consulted by the author and an alphabetical list of grape species and varieties are given at the end of the book, together with a full index.

Throughout the illustrations and figures are clear and helpful and as a reference work this book sets a high standard of excellence.

"The Gardens of Rome." By Gabriel Faure. Translated by Frank Kemp. Water-colours by Pierre Vigual. 4to. 100 pp. (The Medici Society, London [1926].) 36s. net.

A book of great beauty and distinction. The photographs, printed in sepia, are perhaps dwarfed by the superb full-page reproductions of P. Vigual's wonderfully bold water-colours. Though they are so small and scattered among the text they will repay careful examination through a good lens. Then they reveal, as no other medium could, the depth of colour and intricacy of detail in the foliage of Cypress, Pine and Olive, and the patina of age-worn marble and stone.

These gardens owe their charm to marble and ruins, sunlight and shade, cascades and evergreens, and not to flowers and lawns. So it is the history, romance, and architecture, the vistas of distant mountains, or the great buildings of Rome that are chiefly dealt with in the text.

The brilliancy of sunlight, the glint of light on marble columns, the transparency of purple shadows and the sparkle of falling water as shown in the fourteen coloured illustrations recall for those who have seen it the very heart of the beauty of Rome.

"Laboratory Manual for Elementary Botany." By Edmund W. Sinnott. 106 pp. 8vo. (McGraw-Hill Publishing Co., London, 1927.) 5s.

The preface indicates that this Manual has been written in response to requests for a series of laboratory exercises to accompany the author's "Botany Principles and Problems." Criticism of the Manual alone is therefore hardly just.

Ninety-two exercises are clearly detailed. The course forms an elementary introduction to the study of plant anatomy and physiology, and includes in the latter half a consideration of definite types of somatic organization and methods of reproduction. The examples chosen are familiar to all teachers in this country.

The attention of the student is directed to the theoretical considerations involved by the insertion of sharp questions amongst the practical instructions. The nature of these questions demands that a clear differentiation between fact and theory should be made for the student, in the co-ordinated lectures or in the accompanying textbook. A number of the questions deal with controversial topics. How can an elementary student answer such questions as "What important evolutionary advances have the (for example) *Angiosperms* made over the *Gymnosperms*?"

The teleological view finds some representation.

Those teachers who wish to purchase a ready-made outline of a practical course may do so now for five shillings.

"The Evolution of a Garden." By E. H. M. Cox. Vol. 132 of The Home University Library. 8vo. (Williams & Norgate, London, 1927.) 2s. net.

This small book is remarkable for the great amount of information compressed into its thirteen chapters, and the simple and interesting style in which its definite teaching is presented.

As stated in the preface, it is not intended to be a textbook, but to point as signposts to help gardeners on to the right road. There is a width of outlook and a wise charity about it. The author realizes that personal preferences and individuality of taste should be encouraged. "Remember," he writes, "that it is going to be your garden and that your own taste is the main consideration, whether it be a passion for Leeks or a love of Magnolias"; and again: "One of the reasons why gardening . . . is so much alive to-day is the diversity of taste among amateur gardeners." Stating that the mark of a modern garden is that it is made to fit the plants and not the plants to fit the garden, he counsels the reader to understand his plants, and to observe simple rules for their health and their placing. Excellent hints are given for propagating, planting, and the general upkeep of the resultant garden. May the excellent advice herein given fall into the hands of a multitude of owners of gardens in the making!

"Schadlingsbekämpfung Grundlagen und Methoden im Pflanzenschutz." By Dr. Walther Trappmann. 8vo. 440 pp. (Hirzel, Leipzig, 1927.) M. 20 paper; M. 22 boards.

It is just possible to divide in an arbitrary manner the modern literature dealing with plantpathology. The first and most familiar division contains works arranged from the viewpoint of the host plant (or group of host plants). A second aspect of the subject is dealt with in those volumes in which the matter is arranged according to the classification of the parasites. In this book on the "Frustration of Disease" Dr. Trappmann has arranged his material from the point of view of the practical methods of control.

The earlier chapters deal briefly with the causes of plant disease, the relationship of host and parasite, and the appearance and spread of plant diseases generally. Brief mention is made of means of preventing disease by the selection of immune varieties and by other cultural methods, and also of certain biological methods of control, such as the introduction of insects and the protection of birds.

The major part of the book is concerned with chemical methods of control. The various sprays, powders, and their method of application are treated clearly and fully. Other methods (as gas, poison, traps) of dealing with different pests are not omitted.

Frequent references to original papers are found as footnotes. The value of the book is greatly increased by very useful cross-references provided by a brief summary of the diseases mentioned in the text. There can, however, be no doubt that the practical grower would find some difficulty in diagnosing any particular disease and in selecting a method of control if he relied upon this one book alone.

The author has dealt with his subject in a broad manner, and has certainly not reduced his thesis to a catalogue of proprietary articles. The sixty-eight illustrations are good, and the text is clear. The book, however, is somewhat expensive, but should prove a sound investment as a reference work for plant pathologists.

"Practical Microscopy: An Introduction to Microscopical Methods." By F. Shillington Scales. Ed. 3. 8vo. ix + 332 pp. (Baillière, Tindall & Cox, London, 1926.) 8s. 6d. net.

This book has grown with the extension and improvement of the microscope to its present form, and gives to the beginner in microscopy excellent aid in carrying out the various operations preparatory to microscopic examination of plants and in selection of instruments and their use.

"Soils and Fertilizers." By A. J. Macself. 8vo. 224 pp. (Butterworth, London, 1926.) 6s. net.

One of the "Home Garden Books," this deals with soils and their treatment in a fairly clear fashion. The cover and frontispiece suggest long disquisitions upon noxious insects, but the book is not overloaded with these.

"A Treatise on the British Freshwater Algae." By the late G. S. West. New and revised edition, in great part rewritten by F. E. Fritsch. 8vo. 534 pp., 207 figures. (Cambridge University Press, 1927.) 21s. net.

West's "British Freshwater Algae" was a standby of every British freshwater algologist twenty years ago, and probably no book on the subject in any language had a greater claim to respect. With the steady stream of research since 1904 the work had become quite out of date, and owing to the lamented death of the author the much needed revision had to pass into other hands. No one was more competent to undertake that work than Professor Fritsch, who has brought to his task freshness and insight. All students of the subject will welcome the new volume, which, considering the amount of information compressed into its five hundred pages, is of very moderate price. It is hardly correct to regard it as a revised edition, as the work, though on the same lines and possessing some of the old familiar illustrations, has been very largely re-written and is practically a new book. It may be whole-heartedly recommended for all students of Freshwater Algae.

"Insecticides, Fungicides, and Weed Killers." By E. Bourcart. Ed. 2. By J. R. Burton. 8vo. xii + 431 pp. (Scott, Greenwood, London, 1925.) 15s. net.

This work, "translated from the French and adapted to British standards and practice," "revised and enlarged" in the present edition, is "a practical manual on the diseases of plants and their remedies, for the use of manufacturing chemists, agriculturists, arboriculturists, and horticulturists." The intention is therefore excellent, but some better acquaintance with the vocabularies of the sciences involved would have produced a better translation. In England we do not commonly speak of Altises (which are flea beetles) or silphs (which if they have a common name are called mud beetles). Turning over the pages at random we come across such errors as 'nematoides,' '*Chadmosporium*,' '*Frist-cladium dentricum*,' and '*F. dentriticum*,' '*Podospaera oxycanthae*,' '*Monilia frutigena*,'—these do not conform to British standards and practice; and similar examples might be multiplied. One is left wondering what is meant by "Aspergillus algae," "blue virol" (we can guess this). We are left in the dark as to the way to use many of the substances which we are told have proved useful.

In spite of these drawbacks the book is valuable in indicating the uses of a large variety of substances upon a vast number of pests, but because of its shortcomings its usefulness is restricted.

It would have added to the bulk of the book to give references to the source of the experiments quoted, but in such a book as this, where completeness rather than selection seems to have been the aim, it would have added greatly to its value.

We suggested, in reviewing the first edition of this translation, co-operation between chemist and pathologist in reading the proofs, but this does not seem to have been secured—and it is still greatly to be desired.

"The Modern English Garden." La. 8vo. ("Country Life," London, 1927.) 21s. net.

This consists of an "Introduction" by Mr. E. H. M. Cox (pp. v-xix), an Index (pp. xxi-xxiv), and on plate paper about 200 half-tone illustrations of gardens from photographs (pp. 1-192). Many of the illustrations seem familiar, and it would have added interest to the book if the name of the garden illustrated had been given. Each illustration has a note below it, e.g. "In a wide path a mixture of crazy and ordinary paving breaks the monotony;" "Some herbaceous plants, such as lupins, make charming drifts of colour in the semi-wild garden."

"Latin Names of Common Plants: their Pronunciation and History." By F. D. Drewitt, M.A., M.D. 68 pp. 8vo. (Witherby, London, 1927.) 3s. 6d. net.

This is an interesting little book which may correct the prevalent mispronunciations of some Latin names of plants if studied with care, and it is written in a kindly, not a captious, spirit. It recognizes that usage has changed from time to time, and does not accept the prevalent "Continental" pronunciation of Latin as so often taught in schools. It pleads for a return to the classical, but admits the Late Latin pronunciation which frequently holds sway. Perhaps *Primula* will make as much trouble to change as any, for our author points out that by its derivation it should be pronounced, when used as a Latin name, *Primula*.

"Alte Bürgerliche Gartenkunst." By Hans Reichow. 67 pp. (Gartenschönheit, Berlin, 1927.) Paper covers, 4 marks.

This is an illustrated and very interesting account of the old gardens of the seventeenth and eighteenth centuries of Danzig. The text is in German, but the illustrations, taken from old books and also made from photographs of the gardens at the present time, show much of what is best in German garden art. They illustrate well both what is regarded as the type of greatest beauty in these gardens and what from the English standpoint are the drawbacks innate in this type. Like other books in this series ("Bücher der Gartenschönheit") this is of square format and rather wide for the average bookcase.

"Saaleck, Bilder von meinen Hause und Garten in der Thüringer Landschaft." By Paul Schultze. Naumburg. 72 pp. (Gartenschönheit, Berlin, 1927.) Paper covers, 4 marks.

The author has produced a beautifully illustrated account (in German) of the house and garden of Saaleck, where the natural beauty of the site and art have combined to enhance one another's attractions. The use made of gateways and the like in affording glimpses of the surroundings is both pleasing and instructive, while the pictures of the house and its furnishings suggest homely comfort as well as refined surroundings.

"Manual of Plant Diseases." By F. D. Heald. 891 pp. 8vo. (McGraw Hill Publishing Co., Ltd., 1926.) 35s.

This is a typically American publication, well printed and strongly bound, containing a very useful account of recent developments in plant pathology, and is perhaps the only textbook in the English language which deals fully and adequately with non-parasitic diseases. Virus and related diseases are particularly presented. Those due to parasitic fungi are not so well done, and are too few in number in relation to the first part of the book.

Thus, only one chapter each is devoted to the Ustilagineae and the Uredineae, and in the latter only four rusts are described in detail. This inadequacy is somewhat made up for by the inclusion of short summaries and fairly complete references to the most important accounts of every kind of disease.

The historical sketch of the origin and development of plant pathology is decidedly good, as are also the chapters dealing with the effects of unfavourable conditions upon plant growth.

As might be expected from an American work, outstanding and remarkable inclusions and omissions are to be noted. The picture gallery of eminent American writers of textbooks on plant pathology is certainly interesting, but unnecessary to the presentation of the subject even to American students. We are glad, however, that the author has seen fit to include a portrait of the great de Bary.

Characteristic also are the pictures of a "class in plant pathology," the "preparation of culture media," and "the field demonstration." More serious objections are the sketchy and misleading figures 199 to 202. But perhaps the most jarring to European ears is the new nomenclature for certain well-recognized groups. Such names as "sphere fungi" for pyrenomycetes and "palisade fungi" for basidiomycetes are, to say the least of it, absurd.

The omissions are somewhat unexpected. In the otherwise excellent chapter on injury due to lack of potash, the condition known in this country as "scorch" finds no place. *Phytophthora cryptogea* is not mentioned anywhere, and, most curious of all, *Fusarium cubense*, the cause of banana wilt, is omitted. This is the more surprising as it was the American pathologist Brandes who was the first to investigate in some detail this important American disease.

The volume under review is a very good, but expensive, American textbook of plant diseases.

"The Propagation of Hardy Trees and Shrubs." By G. C. Taylor, B.Sc., and J. P. Knight. 120 pp. 8vo. (Dulau, London, 1927.) 5s. net.

There is a good deal of useful information in this little book, but it might with advantage have been fuller, and perhaps more accurate in some particulars. Plants difficult to deal with are not as a rule mentioned, or, if they are, are not dealt with in such a way as to be useful to the novice. We search in vain, e.g., for that useful method of propagating *Viburnum Carlesii* by leaf cuttings; or for mention of root grafting of *Polygonum baldschuanicum*; or of *Clematis Viticella* as a stock for Clematis varieties; or of the ease with which some species of Clematis root from nodal cuttings. Veneer grafting is defined in a different way from that usually intended when the term is used, nor is "side grafting" the best for a large number of deciduous trees. The difficulty of rooting cuttings of certain species of a genus, e.g. in the genus *Salix*, ought to have been drawn attention to.

Names of plants are usually correctly spelt, but we find *Rhamnus alaternus variegatum* for *Rhamnus Alaternus variegata*.

"How Insects Live." By W. H. Wellhouse. xi + 435 pp., 333 figs. (Macmillan & Co., London and New York.) Price 21s. net.

This book is intended as an elementary study of insects rather than a textbook for the specialist. There are twenty-nine chapters, of which twenty-four are devoted to Orders of the Class 'Hexapoda.' Other chapters deal with general considerations; insect anatomy and physiology; the Phylum 'Arthropoda' (including the classes 'Crustacea,' 'Diplopoda,' 'Chilopoda' and 'Arachnida'); and suggestions for collecting and preserving insects, together with keys for determining the adults and larvæ of the principal Orders and Families. There is no bibliography, but at the end of each chapter may be found a list of a few books of reference.

It is the experience of the author that students benefit more by having presented to them a few species as types rather than numerous short generalized accounts of families, and it is in this manner that the subject is presented.

The chapter on suggestions for collecting insects is disappointing, and quite inadequate in a book intended for students. The keys, illustrated with rather crude sketches, at the end of the book cannot be praised, for this system will encourage the student to identify his material from the sketch rather than from the key.

"Insects of Western North America." By E. O. Essig. ix + 1035 pp., 766 figs. (Macmillan & Co., London and New York.) Price 42s. net.

It is stated in the sub-title that this work is intended as a manual and textbook for students, and a handbook for entomologists, foresters, farmers, gardeners and nature lovers. There are twenty-eight chapters, of which the first three deal with the Phylum 'Arthropoda' (other than the class Hexapoda), Arachnida and Insect Classification. The remaining chapters deal with twenty-five Orders

of Insects. There are keys to each Order, Sub-Order and Family which will be found very useful. There are three Indexes, comprising (I.) Authors mentioned in the text (9 pp.); (II.) Host Plants (15 pp.); and (III.) Subjects (101 pp.).

There are numerous references to the work of international investigators scattered throughout the book. The illustrations are excellent. The paper is thin and of good quality. Great care has been taken in the proof-reading, for one finds comparatively few errors. Although this book is primarily a comprehensive study of North American species of insects, it can be thoroughly recommended as a textbook for European students.

"The Physiology of Photosynthesis." By Sir J. C. Bose. 8vo. xx + 287 pp. (Longmans, London, 1924.) 16s. net.

The author has devoted his great skill to making more sensitive apparatus for recording the phenomena connected with the production of carbohydrates in green plants, and here gives an account of his experiments and observations. The account is both lucid and suggestive, and the book a serious contribution to a subject upon the details of which there are still many differences of opinion although there is agreement upon the main facts.

"The Law of Allotments and Allotment Gardens (England and Wales)." By E. L. Mitchell and C. B. Sabin. Ed. III. 8vo. ix + 166 pp. (King, London, 1926.) 7s. 6d.

This valuable little book gives "rules and regulations of the Ministry of Agriculture and Fisheries, together with the Provisions, so far as they relate to Allotments and Allotment Gardens, of the Small Holdings and Allotments Acts, 1908, the Land Settlement (Facilities) Act, 1919, the Acquisition of Land (Assessment of Compensation) Act, 1919, the Agriculture Act, 1920, and the Allotments Act, 1922," with the addition of an explanatory Memorandum on the Allotments Act, 1925, and the text of that Act and the Treasury regulations in connexion with it.

"Horticulture." By K. C. Davis. Ed. 4. 8vo. (Lippincott, London, 1927.) 8s. 6d. net.

This "Textbook for High Schools and Normals, including Plant Propagation; Plant Breeding; Gardening; Orchardng; Small Fruit Growing; Forestry; Beautifying Home Grounds: The Soils and Enemies involved," was first published in 1919 and has reached its fourth edition. It will be observed that in America "gardening" means something different from its connotations in England, and that horticulture includes gardening—it is not coterminus with it.

As a book intended for students it contains questions or "quizzes" and exercises, as well as instructions for practical work and information concerning the plants dealt with. The material used and information given naturally apply to American conditions, and the book will therefore appeal in this country mainly to the teacher, and to him we can heartily commend it for suggestion, inspiration, and instruction.

"The Scientific Work of the late Spencer Pickering, F.R.S." By Prof. T. M. Lowry, F.R.S., and Sir John Russell, F.R.S. With a biographical notice by Prof. A. Harden, F.R.S. (London, 1927.) Price 4s.

This is a very instructive and most fascinating account of the late Spencer Pickering's work. He died in 1920 at the age of 62, and left results, after nearly forty years of research, of which any scientific worker might be proud.

The authors reveal very skilfully Pickering's characteristic attitude of disregard towards authority and tradition. He took nothing for granted; he criticized the methods of growers and challenged their beliefs and practices. In return the growers did not appear to be able to raise that interest in his experiments which they deserved, nor to appreciate the conclusions he arrived at and which were exposed to the most hostile criticism. This may possibly partly have been brought about by the fact that Pickering lacked knowledge and practical experience in fruit growing. This absence of appreciation on the part of growers possibly accounted for the insufficient support of the experimental fruit farm which with the assistance of the Duke of Bedford was started on the latter's estate at Woburn in 1894. The Duke was obliged to withdraw in 1918, and the trials were then controlled by Rothamsted.

Pickering's researches consisted of both pure and applied chemistry. The former group is discussed by Prof. Lowry. It covers such subjects as the principles of thermochemistry, heat of neutralization and colloid chemistry.

With the possible exception of the latter, to which he was led by his horticultural interest, there is no logical connexion between the two lines of research.

The account of Pickering's scientific work as applied to fruit growing is given by Sir J. Russell. Revolutionary ideas is the term he employs to describe Pickering's sweeping conclusions with regard to certain horticultural methods. For example, he maintains that ramming fruit trees at planting, irrespective of the damage this treatment causes to the old roots, is beneficial. Then, again, he says that hard pruning is a disadvantage to fruit trees, inasmuch as it reduces the yield of fruit, though it undoubtedly improves the quality of the fruit. Finally, and this is perhaps one of his most attractive problems, he found that growing grass between fruit trees is harmful. Although this result is contrary to established practice, as many of the best orchards are grassed, it was afterwards shown that the harmful effect of grassing is quite a normal phenomenon. Pickering dwelt at some length on this problem; he did not solve it, for he never knew whether the bad effect was due to the removal by the grass roots of material beneficial to the growth of trees or the excretion by them of some harmful material or the production of some deleterious matter on their decay.

Prof. Lowry and Sir J. Russell have done well to publish this complete account of Pickering's work. Not only has he demonstrated that fruit growing can be subjected to scientific investigation, but he has suggested several problems which will well repay further enquiry. Thus his experiments on the growing of grass in orchards and certain properties of soils which he has discovered should stimulate others to further investigation.

Perhaps the most useful starting point for further investigation is Pickering's work on fungicides and insecticides. He was the first to take this very difficult problem as a subject for scientific research. His practical contribution, from the results of these researches, was the introduction of the Woburn formula for Bordeaux mixture, the chief advantage of which lies in the fact that it is prepared in the dry form and can consequently be stored until required by growers. Otherwise his mixture does not claim to be more universally effective than any of the other numerous recipes. His recommendations probably still need amending, and they therefore form a very valuable basis for further investigation in which mycologists and entomologists as well as chemists might join.

He has published about 160 papers and memoirs, in addition to the 18 Woburn reports. This volume is printed for the Royal Society, is well got up, and sold at a low price.

"How a tree grows." By Sir W. Somerville. 212 pp. 8vo. (Oxford University Press, 1927.) 10s. net.

These expanded notes of lectures to forestry students are written with clarity and selected with judgment. They form an interesting, informative, and valuable textbook, easy to understand, well illustrated by many original drawings, clearly printed, and altogether a book one may safely put into the hands of the young student, and of anyone who takes an intelligent interest in the life of the trees around him and who desires a more intimate knowledge of their way of life.

"The Economy of a Norfolk Fruit Farm." By C. W. B. Wright and R. McG. Carslaw. 8vo. 62 pp. (Cambridge University Press, 1927.) 2s. paper.

Accountancy as applied to Agriculture is a recent and invaluable development, but so far it has not spread to that branch known as Fruit Farming. Some attempts have indeed been made in recent manuals to arrive at correct estimates and costs, but their accuracy still lags behind that of the best arable farming.

The present Report, published by the Farm Economics Branch of the University of Cambridge, is, we hope, but a pioneer of an advancing army of workers upon costs as applied to Fruit Farming.

Through the kindness of a grower, a mixed fruit farm was offered for investigation and the whole of the figures laid open to the study of the authors. The years 1924 to 1926 were investigated, and very much of interest is brought out even in this limited time.

It is not possible to discuss here the many interesting points which are revealed in this valuable investigation, but the great loss caused by planting on unsuitable soil is strikingly demonstrated, and also that from the failure to appreciate the remarkable variation in the make-up of the soil even in one field.

Planters are apt to put down such failures to bad trees or unsuitable stocks, when the cause is often more fundamental, and in many cases detailed soil analysis would be a valuable investment.

All fruit growers should study this paper, and even consumers who criticize the high price of fruit would learn that this does not in many cases come back to the

grower. For instance, the cost of marketing apples, including packages, rail and salesman's charges, etc., is 28.2 per cent. of the gross return, this being only the cost as far as the first buyer.

"The Home Gardens Handbooks." "Shrubs." By F. F. Rockwell. 76 pp. 8vo. "Gladiolus." By F. F. Rockwell. 79 pp. 8vo. (Macmillan, New York, 1927.) 4s. 6d. net each.

American in intention, and, so far as the Shrub book is concerned, neither very informative nor particularly accurate, these little books are unlikely to be found very useful by English garden lovers, and their high price is also against them.

"Principles of Soil Microbiology." By S. A. Waksman. xxvii + 897 pp., 18 plates, 77 figs. (Baillière, Tindall & Cox, London, 1927.) 45s.

"The practical men expected that soil microbiology would revolutionize agriculture just as medical bacteriology revolutionized medicine, but this did not materialize. Where this influence was strongest . . . some people came to believe that, outside of legume inoculation, there is nothing in the whole science of soil microbiology. This attitude towards a science which lies at the very roots of all soil economy, and will no doubt influence, in the future, the whole agricultural practice, could result only from a lack of sufficient knowledge concerning the problems under consideration" (p. 839).

It is true, as Waksman tells us in the passage quoted, that the application of microbiology to soil problems has not led to revolutionary changes such as it has effected in medicine and its allied sciences and in many industrial processes. For all the high hopes that have been entertained, and for all the countless investigations that have been made, it is in fact hard to point to any practical contribution that the science has made beyond explaining what was already known to agriculturists. In spite of such considerations, however, no one can read the present book without a feeling of great respect for what this young science has already achieved in throwing light on the nature of the soil. The merit of the book lies not merely in the fact that its 900 pages constitute a veritable encyclopædia of information relating to the subject, but still more in the fact that the author gives us a point of view by which this information is synthesized into a consistent and comprehensible whole.

The mere accumulation of facts, indeed, has of late tended rather to obscure than to elucidate the main problems. The days when one could isolate an organism, investigate its activities under laboratory conditions, and confidently go on to attribute to it precisely similar activities in the soil, have gone. Instead, each addition to our knowledge has emphasized the complexity of the interactions between the different soil organisms and between each of them and the environmental conditions. The equilibrium between them appeared so delicate and the web of interactions between them so complex that there seemed little hope of ever disentangling it. Recently, however, the realization has been growing that the key to this tangle lies, not in the consideration of the activities of isolated organisms or of isolated biochemical changes, but in the broad problem of the transformation of energy in the soil. This is the idea which is developed on a comprehensive scale for the first time in this book, forming a connecting link between all the diverse phenomena covered by the subject.

The diversity of the subject is indeed great, and many outside the ranks of the soil microbiologists will find chapters of value to them. The general zoologists and botanists will find much that is probably new and of interest to them in the chapters on the occurrence and activities of algae, fungi, actinomycetes, protozoa, nematodes, etc., in the soil. To the biochemist the chapters on the metabolism of micro-organisms, on the decomposition of nitrogenous and non-nitrogenous organic compounds, on the oxidation and reduction processes in the soil, etc., will be found to give an admirable review of topics whose interest extends far beyond their application to soil problems. And to the soil chemist the discussions of nitrogen fixation, the transformation of organic and of inorganic substances in the soil are of obvious value.

It is, however, greatly to be hoped that many readers will be found who, instead of selecting the chapters bearing directly on their own special interests, will make the whole book an object of careful study, for it is precisely in his ability to handle both biological and chemical facts easily and to bring them together into a single unified scheme that Waksman's strength lies. Too much of the soil microbiological work of the past has been done either by biologists with limited chemical training or by chemists who have been unable to appreciate the nature of biological problems. In proportion as Professor Waksman's lesson becomes assimilated by soil workers we can expect to find a much clearer

appreciation of the essential problems of the subject than has been apparent in much of the work of recent years.

One cannot but regret, however, that for the sake of the less specialized readers the author has not provided *résumés* of his chapters. In his desire not to omit any relevant references he has caused the book to read in places rather too much like a series of abstracts of the literature in which it is not always easy to distinguish the really significant facts from those which are comparatively unimportant or even dubious. This method sometimes leads to ambiguity, as in the case of the statement on p. 464 that "It is possible . . . that some fat may also be decomposed under anaerobic conditions," which is flatly contradicted on p. 385. Modesty and impartiality are great virtues in the writer of a comprehensive work such as this, but a little less modesty on the part of Dr. Waksman in his criticisms of the work of other investigators would have been very helpful to his readers.

Considering its size the book is very free from misprints and other errors. Crump is given as the authority for a statement on p. 328 that amoebae are influenced by variations in water content, etc. The omission of the prefix "un" has unfortunately reversed the meaning of this sentence. In the equation on p. 372 *ln* should read *log*.

"Principles of Soil Microbiology" is undoubtedly destined to be the constant companion of all workers in the subject.

"Common British Wild Flowers Easily Named." By I. E. Waltham. xvi + 194 pp. 8vo. (Oxford University Press, 1927.) 3s. 6d. net.

Not a book for the critical student, this will, however, help many to arrive with little difficulty at the names, botanical, French, German and English, of about one hundred and eighty common wild plants, grouped according to colour, figured with a characteristic sketch, and given the name of the family, habit, height, habitat, and other brief notes.

NOTES AND ABSTRACTS.

[For Index of Periodicals quoted see previous volumes.]

Asters, China, Fusarium Wilt of. By A. B. Jackson (*Sci. Agr.*, vol. 7, pp. 233-247, 1917; figs.).—The wilting of China Asters is due to the fungus *Fusarium conglomerans* var. *Callistephi*, but other species of *Fusarium* isolated from China Asters have proved strongly pathogenic. A temperature of 20°-25° C. was found favourable, one of 17°-20° C. unfavourable to wilt. It is supposed that the disease may be carried by infected seed, but no evidence is adduced that seed is a frequent source of trouble. On the contrary, soil is shown to be frequently infected, and it can be rendered innocuous by soaking with formalin 1 to 50 or mercuric chloride 1 to 1,000. Resistant plants have been found, and it is believed that resistant strains might be raised.—F. J. C.

Bean, Soya, Anthracnose. By S. G. Lehman and F. A. Wolf (*Jour. Agr. Res.*, 33, No. 4, pp. 381-390).—This disease was first observed in N. Carolina in 1920, and is believed to be identical with *Colletotrichum glycines* Hon.

The symptoms are numerous black acervuli uniformly scattered over affected areas. The organism is seed-borne, existing as a mycelium in the seeds.—A. B.

Bean, Soya, Brown Spot Disease of. By F. A. Wolf and S. G. Lehman (*Jour. Agr. Res.*, 33, No. 4, pp. 365-374).—This disease was first described in Japan in 1915 and later in America in 1922. Brown spot causes brown or reddish spots upon the blades of the leaves and sometimes also upon the stems and pods. It appears to be seed-borne and attacks the cotyledons and then the foliage. The disease has been established by artificial inoculation. The spores may pass through the stomata and the mycelium is intercellular. The causal organism is *Septoria glycines*, which reproduces by conidia. No ascogenous stage is known.—A. B.

Bean, Soya, Pythium Root Rot of. By S. G. Lehman and E. A. Wolf (*Jour. Agr. Res.*, 33, No. 4, pp. 375-380).—The authors describe a wet rot disease of the roots induced by *Pythium de Baryanum* (Hesse). This causes the roots to decay and the plants to wither and die.—A. B.

Beans, Soya, Diseases of. By F. A. Wolf and S. G. Lehman (*Jour. Agr. Res.*, 33, No. 4, pp. 391-396).—The authors find that various diseases of soya beans are transmitted by means of the seeds. The following diseases occur both in the Orient and North Carolina: wilt (*Fusarium tracheiphilum* Smith); mildew (*Peronospora manshurica* (Nasum) Syd.); brown spot (*Septoria glycines* Hemmi); pod blight (*Diaporthe sojae* Lehm.); anthracnose (*Glomerella glycines* (Hon.) Lehm. and Wolf); Cercospora leaf spot (*Cercospora daiza* Miura); and bacterial blight (*Bacterium sojae* Wolf).—A. B.

Blackberry Mite, The; The Cause of Blackberry Disease of the Himalayan Blackberry and its Control. By E. O. Essig (*California Agr. Exp. Sta., Bull.* 399, Dec. 1925, pp. 3-10, 5 figs., 1 plate).—A short account of the blackberry mite, *Eriophyes gracilis* Nal., which is a common pest in Europe on raspberry, *Rubus idaeus*. In California, the mite confines its attacks to the Himalayan blackberry. Symptoms of attack are (i) aborted drupelets, (ii) retarded and uneven ripening of the berries, and (iii) an abnormal red condition of the berries.

The mite is figured and described.

Control methods are confined to the thorough spraying of the canes in early spring, when the new growth starts and before the flowers open, with 4 to 6 per cent. lime sulphur. In severe attacks, summer spraying with 4 per cent. lime sulphur followed by a further application in early spring will insure complete protection.—G. F. W.

Bulb Flies, Eumerus strigatus Flyn. and *E. tuberculatus* Rond. in South-West England, The Bionomics of the Lesser. By W. E. H. Hodson (*Bull. Ent.*

Res., vol. xvii. Pt. 4, June 1927, pp. 373-384, 2 plates).—In the introductory remarks it is made clear that of the two species of *Eumerus* found attacking Narcissus, *E. tuberculatus* was responsible for 90 per cent. of the total cases recorded. The egg, larval, pupal, and adult stages of *E. tuberculatus* are described, together with its life history and seasonal biology. The results obtained from an examination of bulb samples and experiments are set out in tables.

Remedial measures include (i) destruction of soft bulbs, (ii) hot-water treatment as for eelworm, and (iii) fumigation of stored bulbs with paradichlorbenzene. Preventive measures include (i) ripening bulbs under cover of a shed or lean-to outbuilding, (ii) decoy heaps of bulbs for attracting and encouraging flies to oviposit, (iii) deterrent sprays, (iv) raking beds to remove dying foliage and fill in cavities, and (v) earthing up rows of bulbs after cutting off the foliage.—G. F. W.

Cabbage, Phosphorus and Calcium Water soluble Contents in. By W. H. Peterson and Clara B. Peterson (*Jour. Agr. Res.*, 33, No. 7, pp. 695-699).—The percentage of calcium in cabbages ranged from 0.038 to 0.053 per cent., and about 60 per cent. of this was soluble in water. The percentage was highest in immature cabbage and decreased as the plant grew older.

The figures for phosphorus varied from 0.023 to 0.036; and about 61 per cent. of this was soluble in water. Like calcium, the percentage of phosphorus decreased as the season advanced.—A. B.

Carrots, Black Rot in Storage. By J. I. Lauritzen (*Jour. Agr. Res.*, 33, No. 11, pp. 1025-1042, 4 figs.).—The disease (*Alternaria radicina*) is capable of infecting carrot roots through the uninjured skin. The infection only penetrates a few cells deep. The disease, however, can enter readily through wounded surfaces, rootlets and new wound surfaces. There is a great increase in infection if the temperature rises above 28° C. The disease can infect 17 varieties of carrots.—A. B.

Caterpillars and Plant Lice Attacking Chrysanthemums under Glass. By F. V. Theobald (*Jour. S.E. Agr. Coll., Wye*, No. 24, July 1927, 7 pp., 4 figs.).—With the increased cultivation of Chrysanthemums under glass, an attempt was made to ascertain the insect pests of this important market crop. The immature and mature stages and the life histories of the various insects are described.

Amongst Lepidopterous pests we find (I) the Angle Shades moth (*Phlogophora meticulosa*), (II) the Bright Line Brown Eye (*Hadena oleracea*), (III) the Turnip moth (*Agrotis segetum*), and (IV) the Gothic moth (*Naenia typica*). Control measures include (i) trapping the adults of I, II and III in bottles filled with beer and sugar, (ii) lead arsenate spraying when the plants are young for the larvæ of I, II and IV, and (iii) Bran and Paris Green bait spread in small heaps on the soil for the larvæ of III.

Seven species of Aphides are recorded, namely, (I) the Dark Chrysanthemum Aphis (*Macrosiphoniella sanborni* Gill.); (II) the Lined Green Artemisia Aphis (*Macrosiphum lineatum* V. d. Goot); (III) the Green Peach Aphis (*Myzus persicae* Sulz.); (IV) Buckton's Myzus (*M. circumflexus* Buck.); (V) Duffield's Myzus (*M. duffieldii* Theob.); (VI) the leaf-curling Plum Aphis (*Anuraphis helichrysi* Kalt.); and (VII) the Bean Aphis (*Aphis rumicis* Fab.). Of these, the first, third and fourth are most frequently found.

Control measures include (i) spraying the plants before flowering with Nicotine-Soap wash, and (ii) fumigating with tobacco shreds when the plants are in bloom.

G. F. W.

Cherry Pollination (Zelfsteriliteit en Komsbestuiving van eenige kersen-soorten in Zeeland). By A. M. Sprenger and A. K. Zweede (*Lab. v. Tuinbouw-plantenteelt*, Bull. 4, Sept. 1927).—Unsatisfactory setting of cherries has occurred in Zeeland, the main varieties affected being 'Hollander' and 'Klerk.' These prove self-sterile or nearly so, but pollen of 'Zoete Morel,' 'Dubbele Eierkriek,' and 'Hollander' gave a good set with 'Klerk,' and 'Klerk' and 'Zoete Morel' pollen are probably good for 'Hollander.'—F. J. C.

Citrus Blight. By G. O. Ocfemia and E. F. Roldon (*Amer. Jour. Bot.*, xiv. No. 1, Jan. 1927, pp. 1-15, 2 plates).—The blight of citrus caused by *Phytophthora Faberi* attacks young growths and seedlings of citrus spp. The disease is prevalent during moist weather and causes 90 per cent. loss of seedlings in seed beds. The fungus has been cultivated on potato-dextrose agar, oatmeal agar, and bean agar, where it has formed numerous conidia and chlamydospores. The fungus is pathogenic on various species of citrus, coconut seedlings, cacao

Pods and egg plants. The degree of susceptibility of the various species of citrus appears to differ, and this suggests a measure of control for the disease.—A. B.

Cockchafer Larvæ on Grass Land, An Attack of ; and Some Experiments in Connection with their Control. By F. V. Theobald (*Jour. S.E. Agr. Coll., Wye*, No. 24, July 1927, 4 pp., 1 fig.).—A short account is given of a series of experiments on the control of cockchafer larvæ in grassland in Kent during 1924. Some general notes are given on the distinctive characters of chafer larvæ together with their habits.

The principal natural enemies are birds, of which Magpies and Missel-thrushes are the chief.

Chemical substances—e.g. Naphthalene, Kainit, Acetylene waste and Gas Lime—were disappointing, and the most promising results were obtained by mechanical means in the form of a steam roller which gave a mortality of 70–75 per cent. by the roller and 80–95 per cent. by the wheels. Greater mortality was obtained when the land was firm and dry. The cost of the roller was £2 10s. a day, including water and coal, and five acres of firm land could be rolled in a day. The cost for each acre is 10s., against 30s. to 45s. with naphthalene when used at the rate of 2–3 cwt. an acre.—G. F. W.

Cruciferous Plants, Leaf Spot Disease of. By J. L. Weimer (*Jour. Agr. Res.*, 33, No. 7, pp. 645–650).—A leaf spot disease of cruciferous plants caused by *Alternaria herculea* Ell. and Mart. is described. The disease is very similar to that caused by *Alternaria brassicæ* and is often confused with it. This disease is parasitic upon cabbage, cauliflower, Chinese cabbage and swede.

The spores of *Alternaria herculca* are longer than those of *Alternaria brassicæ*, are lighter in colour and have more longitudinal septa. *A. herculea* spores are $125 \times 225 \mu$ long, but *A. brassicæ* spores are 35 to 76μ long.—A. B.

Gall Midges of Economic Importance, British. Parts I–V. By H. F. Barnes. (*Jour. S.E. Agr. Coll., Wye*, No. 24, July 1927, pp. 65–146).—An exhaustive account is given of the British species of Gall Midges (*Cecidomyiidae*) which attack—I. Cereal Crops (Wheat, 4 spp.; Rye, 3 spp.; Oats, 2 spp.; and Barley, 5 spp.). II. Fodder Crops (Clovers, Vetches and Lucernes, 11 spp.; Grasses, 3 spp.). III. Fruit (Pear, 3 spp.; Apple, 2 spp.; Plum, 1 sp.; Gooseberry, 2 spp.; Black Currant, 1 sp.; Blackberry, 3 spp.; and Raspberry, 2 spp.). IV. Vegetables (Crucifers, 3 spp.; Peas, 1 sp.; Marrow, 1 sp.; and Mushroom, 1 sp.). V. Miscellaneous Plants (Hops, 1 sp.; Violets, 2 spp.; Roses, 6 spp.; and Chrysanthemum, 1 sp.).

Each species is dealt with separately and the following information appended: references, original descriptions, distribution, life history, food plants, natural enemies and control measures. A long list of references is given on pp. 131–142, whilst a complete index of generic, specific and popular names of midges and plants concludes the paper.—G. F. W.

Gooseberry Mildew. The control of American, in Ireland. By A. E. Muskett and E. Turner (*Jour. Min. Agr. N. Ireland*, vol. i. 1927, pp. 1–24, pl.).—Two sprayings with ammonium polysulphide wash, one immediately after flowering, the second three weeks later, controlled the mildew, the first spraying being the more important. Lime sulphur or ammonium polysulphide may be used combined with lead arsenate if a little freshly slaked lime be added to spray Whinham's Industry when Gooseberry sawfly is troublesome. For 'Amber' and other sulphur varieties one spraying with 2 per cent. caustic soda in February and two in summer with washing soda 100 oz., skimmed milk 1 gallon, water 100 gallons is recommended.—F. J. C.

Insect Pests of Boxwood. By C. C. Hamilton (*New Jersey Agr. Exp. Sta., Circ.* 179, Feb. 1926, pp. 3–14, 8 figs.).—The life history, type of injury, and control of four pests of boxwood are briefly given. With the exception of the first-named, these pests occur in Britain—the boxwood leaf-miner, *Monathropalpus buxi* Labou; boxwood psylla, *Psylla buxi* L.; oyster-shell scale, *Lepidosaphes ulmi* L., and spider mite, *Paratetranychus yothersei* McGregor. The eight photographs simplify the identification of the various pests.—G. F. W.

Onion Fusaria. By G. K. K. Link and Alice A. Bailey (*Jour. Agr. Res.*, 33, No. 10, pp. 929–952).—In this paper are described *Fusarium zonatum* (Sherb.) Wr. N. F.; *F. cepae* (Hanzawa); *F. bulbigenum* (Cke. et Mass.); *F. oxysporum* (Schlecht) and *F. vasinfectum* (Atk.).

The common Fusarium (*F. moniliforme* Sheld.) is pathogenic at times, but *F. oxysporum* and *F. vasinfectum* are not pathogenic.—A. B.

Onions, Botrytis Rot. By J. C. Walker (*Jour. Agr. Res.*, 33, No. 10, pp. 893-928).—There are three closely related diseases of onion bulbs: Neck rot (*Botrytis allii* Munn), mycelial neck rot (*B. byssoidea* Walker) and sclerotial neck rot (*B. squamosa* Walker). These are distinguished from each other by their growth on potato-dextrose agar. Coloured varieties of onions are less susceptible to attacks than the white varieties, and this suggests a means of control.—A. B.

Organic Matter in Soil, Decomposition of. By H. H. Hill (*Jour. Agr. Res.*, 33, No. 1, July 1926, pp. 77-100).—The chemical and biological decomposition of organic matter is of great importance in improving soil conditions and plant growth. The author deals particularly with green crop manuring, and a summary of his results is as follows: Pure cellulose applied to soils in different amounts restricted plant growth and the restriction was proportional to the amount of cellulose added. Plants grown in a well-balanced nutrient solution were healthy and vigorous, but the addition of cellulose depressed growth. The depression was proportional to the amount of cellulose added. Decomposing cellulose produced H_2S by reduction of $CaSO_4$ and $MgSO_4$ in the nutrient solution. The roots became very much discoloured and unhealthy in appearance.

When green materials were allowed to decompose in the soil, no nitrates were detected at the end of ten days; but if the green materials were dried, nitrates were present, generally in greater amount under a legume than under a non-legume.

Drying green manures retard their decomposition, due to the conversion of the sugars and cellulose into less soluble forms.—A. B.

Pears, Harvesting and Handling of Box. By H. Hartman, J. R. Magness, F. C. Reimer, M. H. Haller (*U.S. Exp. Sta., Oregon, Bull.* 228, July 1927).—The proper time of picking to ensure best quality and long keeping is given as flesh pressure with skin removed testing to 14 to 16 lb. with a plunger tip $\frac{1}{8}$ inch in diameter. From other districts than the Rogue Valley the exact pressure may vary and must be a subject for investigation. For long storage the fruit should be put into a temperature of 30° to 32° F. at once—a few days' delay is detrimental to the keeping qualities. 40° F. appreciably retards the ripening process and interferes with the keeping qualities.—F. J. C.

Raspberry Diseases: Mosaic, Leaf Curl, Rosette, and Wilt. By G. H. Berkeley and A. B. Jackson (*Dep. Agr. Canada, Pamph.* 72, 1927).—The first three diseases are due to "virus" and are transmissible by sap; the wilt is due to *Verticillium ovatum* sp. nov. and has been called "blue stem of the red raspberry" (see *Phytopathology*, vol. 14, p. 347, 1924). The characteristic symptoms are yellowing, wilting, and casting of leaves. The stem may acquire a blue tinge, but this is sometimes wanting. It is thought that potatoes, tomatoes and egg plants may, if planted between the rows of raspberries, introduce the disease.—F. J. C.

Raspberry Verticillium Wilt. By G. H. Berkeley and A. B. Jackson (*Sci. Agr.*, vol. 6, pp. 261-270).—Gives information regarding the wilt disease mentioned above and a bibliography.—F. J. C.

Spreaders for Spraying Materials and the Relation of Surface Tension of Solutions of their Spreading Qualities. By R. H. Robinson (*Jour. Agr. Res.* vol. xxx. No. 1, July 1925, pp. 71-81).—The investigation was undertaken to ascertain (i) the efficiency of the known spreaders and to search for others that may be more efficient, (ii) the correlation between surface-tension values of various materials and their spreading properties, and (iii) a laboratory method whereby the approximate spreading properties of a substance may be estimated.

The literature dealing with the subject is reviewed.

Skim milk, neutralized with hydrated lime, and certain other milk products appear to be the best materials for practical purposes.

Variable factors—e.g. the type and age of the surface to be sprayed, the pressure used, and climatic conditions—affect the concentration of an efficient spreader solution. The amount of lead arsenate that adheres to the leaf surface is approximately the same when a spreader is present as when it is absent.

G. F. W.

Strawberry Aphis (*Capitophorus fragariae* Theobald), The Effects of: on the Strawberry Plant. By H. R. Briton-Jones and L. N. Staniland (*Jour. Pomol.* vol. vi. No. 2, June 1927, pp. 128-136, 5 plates).—An historical account is

given of the species of aphides which attack the strawberry. A number of experiments were carried out in order to test the effects of *C. fragariae* on the strawberry plant.

Symptoms of attack are given in detail, together with excellently produced photographs illustrating the various effects of aphid attack.

Control measures include (i) the dipping of all runners, before planting in autumn, in nicotine-soap wash—the need for thorough wetting of all plants is emphasized—and (ii) careful selection of runners, as it is found that the best runners are obtained from aphid-free parents.

In conclusion, a bibliography of twelve papers is given.—*G. F. W.*

Sugar Beet, Climatic Effects in the Metabolism of. By W. E. Tottingham, S. Lepkovsky, E. R. Schulz, and K. P. Link (*Jour. Agr. Res.*, 33, No. 1, July 1926, pp. 59–76).—Results are given for diurnal changes of chemical composition in leaf blades of sugar mangold and sugar beet.

The percentage of reducing sugars in the leaf blade increases with solar radiation within limits. Temperatures seem to be a limiting factor in the increase of these sugars when its value approaches 30° C.

The percentage of soluble protein in the leaf varies in a manner inversely related to temperature, and therefore correlated with the fluctuation of reducing sugars. This constituent gave a correlation with temperature of -0.39 ± 0.106 for periods of light and darkness combined. The foliar fluctuations in reducing sugars are distantly paralleled by the deposition of sucrose in the root, while relatively high temperatures increase the percentage of protein stored in this organ.

These results explain practical observations that cool, fair weather, such as usually occurs in the autumn, is favourable to storing of high percentages of sugar in the beet-root. A short bibliography is appended.—*A. B.*

Tomato Streak. By G. H. Berkeley (*Sci. Agr.*, vol. 7, pp. 210–223).—It is recommended that the use of too much nitrogenous manure should be avoided and an endeavour should be made to secure even, steady, regular growth, avoiding forcing and checking. It is shown that the development of disease is dependent upon conditions in environment and that unless favourable conditions exist inoculation is not followed by the disease.

Whereas in England *Bacillus lathyri* has been regarded as the cause of streak, the author (with others) considers it due to a filterable virus, and all varieties experimented with proved equally susceptible.

Transference of mosaic diseases from tomato to potato and tobacco and vice versa are reported.—*F. J. C.*

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MASTERS MEMORIAL LECTURES, 1928.

SOME RECENT ADVANCES IN THE CONTROL OF INSECT
PESTS.

By Professor F. V. THEOBALD, M.A., V.M.H., F.E.S.

LECTURE I.

[Read February 28, 1928; Mr. H. V. TAYLOR, O.B.E., B.Sc., A.R.C.S.,
in the Chair.]

1. The Destruction of Insect Eggs on Fruit Trees.

It has always been our aim to be able to destroy the too numerous insect enemies on our fruit trees and bushes whilst in the egg stage (during the dormant period of the trees), and so not only in a more or less slack period in the year, but before any harm has been caused by the insects in their very young stages, harm which is too frequently not noticed.

Spring and summer spraying has done (and always will do) a great deal of good, but that treatment comes at a time when we have much other work to do in the orchard and garden. How much better if we can control even some of these pests in winter when time is more available!

A considerable number of potential fruit pests of the orchard and garden pass the winter on fruit trees and bushes in the egg stage. Amongst the most important are the Aphides of apples, pears, plums, currants, and gooseberries; the Apple Sucker; the Winter Moths;

the Vapourer and Lackey Moths; some of the Tortrix Moths; the Capsid Bugs; the Mussel Scale; and some of the Red Spiders.

Other insects hibernate in the immature stages, such as some of the Tortrix Moths, Gold Tail Moth, Brown Tail Moth, the Bud Moth, the Case Bearers or *Coleophora*, Woolly Aphis, the Brown Scales and the Oyster-Shell Bark Louse.

Some, at least, of these we can destroy in the dormant period.

As far back as 1896 trials were made in Kent and other places with caustic soda, in the hope that it would prove a useful egg destroyer as well as a means of cleansing the trees of moss and lichen. The original wash used was made of 10 lb. of caustic soda and 10 lb. of caustic potash to 100 gallons of water.

These early experiments showed that some of the Apple Sucker eggs and a few aphid eggs were affected and that even a small number of Winter Moth eggs were killed, but the control at the most was only partial. The cleansing effect on the trees was quite as good as anything recently employed, and many gardeners still persist in its use.

Results in Kent, however, showed that as an egg destroyer it was of little value, although its effect on Mussel Scale was very marked.

Later lime-sulphur and lime-sulphur-salt washes were tried in Kent to test their value as egg destroyers and tree cleansers (as much was claimed for these washes in America and South Africa). It was said by some that where strong lime-sulphur washes were used many young insects died from contact with it (Gillette and Weldon), and by others that the effects on Scale Insects were very marked.

Results of experiments carried out at Wye and on commercial farms in Kent from 1904 to 1913 * showed that although good resulted as a scalecide, especially on Brown Scales and Oyster-Shell Bark Louse, these washes were of little value as ovicides.

Numerous winter washes were experimented with at Woburn by Mr. SPENCER PICKERING. None of these had any direct ovicidal effect, except upon Mussel Scale.†

In 1905 HOWARD CHAPMAN of Greenhithe found that a winter wash of hot lime controlled to a marked extent attacks of Apple Sucker and the Leaf Curling Plum Aphis. The results in his plantations looked so promising, and so much good was done to the trees, not only by cleaning them, but by the after-effects of the lime in the soil washed off them, that many experiments were carried out with this treatment in Kent, and the wash became largely used by growers there and, later, in Worcestershire and Cambridgeshire. The general results obtained showed that the wash when put on hot was undoubtedly beneficial as regards Plum Aphis and Apple Sucker, especially when applied just as the buds were swelling or even bursting, but it gave no control of Apple Aphides, Winter Moth or Red Spider. Its beneficial effect

* *Journal S.E. Agric. College*, No. 13, 1904, pp. 150-153, and No. 22, 1913, pp. 249-264.

† 6th, 8th, and 10th Reports Woburn Exp. Fruit Farm, 1906, 1908, 1909.

on the trees was so marked that many growers continued to use this treatment until the last five years. In 1905 as the result of a visit to the Worcestershire plantations for the Worcestershire County Council,* a series of experiments with winter washes were inaugurated in 1906, especially as a means of controlling the Apple Sucker, a serious pest in the county at that time. These experiments were conducted by Mr. KENNETH FURLEY of Wye College and the results embodied in a Report issued by the Worcestershire Education Committee in 1907.† Nine winter washes were tried in these experiments in eight different localities, and these were the first large experiments carried out on fruit trees in this country. Amongst the washes used were caustic alkali wash (caustic soda and carbonate of potash), caustic soda at double strength, lime-sulphur and caustic-soda wash, hot lime and Mr. Spencer Pickering's paraffin-soda wash. These experiments showed conclusively that as regards action on *Psylla* eggs the following were useless, namely, ordinary and double strength caustic soda, paraffin emulsions, lime and paraffin, combined paraffin and soda and lime sulphur, but the hot lime and salt wash proved itself capable of checking the ravages of this (then) most serious pest to an appreciable extent.

Other results of these experiments clearly demonstrated that both strong paraffin emulsion and double strength caustic soda had destroyed the eggs of the Mussel Scale. PICKERING at Woburn about this time gained similar results. Although this hot lime wash was most helpful in checking Apple Sucker and the Plum Aphis, it had no effect on other insects. It was used at the rate of 1 to 1½ cwt. of white lime to 100 gallons of water. Salt, waterglass, glue, paraffin, and other substances were tried to prevent the lime flaking off, but nothing proved of any special value. The main thing found was that it was advantageous to get the lime on as hot as possible. After much experiment and its use very largely in Kent and Worcestershire one had to come to the conclusion that, although it was at that period the best available preventive of Apple Sucker damage and also Plum Aphis, as an actual *ovicide* it had no more effect than caustic soda, lime-sulphur, or the other winter washes.

Some eighteen years ago a Carbolineum wash was used as a winter wash in Germany and this was developed by the Dutch. The first wash of this kind introduced into England was the Dutch Carbokrimp, which (if I remember aright) was first noticed in this country by the Long Ashton Research Station. Since then many washes of a similar kind, manufactured in this country, have been placed on the market, such as Mortegg and Abolene and others. These washes are now spoken of as tar distillates.

When the Carbokrimp came on to the market, laboratory trials and small open-air experiments were at once carried out at Wye, and

* *Report on the Orchards and Fruit Plantations of Worcestershire, with a Short Account of some of the Worst Diseases observed, 1907*, pp. 30.

† *Report on the Experimental Spraying for the Apple Sucker, with Notes on the Mussel Scale, Red Spider, and Brown Rot*, pp. 26, 8 plates.

these showed conclusively that it had a very marked effect on the eggs of several insects experimented with.

The following may be quoted regarding these early trials (*vide* "Report of the Advisory and Research Dept. S.E. Agric. College for 1923" (1924), p. 14). With *Psylla mali* or Apple Sucker 100 per cent. of the eggs were killed with actual contact; 90 per cent. of Tortrix eggs; 95 per cent. of Winter Moth; 100 per cent. of Vapourer Moth and 90 per cent. of the eggs of *Aphis pomi*; 100 per cent. of the Leaf-Curling Plum Aphis and 70 per cent. of the Red Currant Aphides. Capsid ova were not affected. These experiments were made on freshly cut egg-infested twigs in the laboratory and checks on sleeved branches and shoots on trees and bushes in the open.

Experiments in duplicate carried out the following year showed the same results, but other trials made with Red Spider eggs showed that it had no effect upon them; and the number of Winter Moth eggs destroyed in twelve series only averaged 20 per cent. These results have since been borne out by the experiments of PETHERBRIDGE and WESTON in Cambridgeshire * and by JARY in the Western Midlands,† the chief differences being that the former found that tar distillates gave only a very partial control of Capsid Bugs on apple, the latter that they gave an excellent control at 10 per cent. solution.

These experiments showed very clearly that some tar distillates on the market acted as a very definite control for aphid on apple and plum and for the Apple Sucker. Some of these trials showed a marked reduction of Winter Moth.

In one experiment with 10 per cent. Carbokrimp the Winter Moth damaged trusses were 12 per cent., with Mortegg 21.4 per cent.; whilst the unsprayed had 46.4 per cent. damaged: a fair partial control.

Experiments carried out at Wisbech by Mr. KENT with a 10 per cent. Carbokrimp caused a marked reduction in caterpillar attack (mainly, it is said, of Tortrix).

From these experiments it was also clearly shown that different tar distillates gave very different results in the control of the Leaf-Curling Plum Aphis, Rosy Apple Aphis, and other pests. Some gave complete control, others very little.

All results show that none had any effect on Red Spider eggs.

Results showed that Carbokrimp and Mortegg had practically a complete control over Apple Sucker.

In 1926 C. E. HUDSON of the Horticultural Institute of Agriculture in Hertfordshire carried out trials with tar distillates on aphid eggs on black currants.

He summarizes his results as follows ‡:

- "(1) Aphis on black currants has been effectively controlled by the use of Carbokrimp, less effectively by Spray B.
- (2) An effective tar distillate spray contributed greatly to securing fruit of the highest quality.

* *Journal Ministry of Agriculture*, July and October 1926.

† *Ibid.* November 1926.

‡ *Ibid.* xxxiii. July 1926.

- (3) Bushes on which aphid was controlled made good growth and thus the benefit from successful spraying will extend to subsequent years."

From large practical trials made by many growers all over the country, the same results have been obtained, namely that the best tar distillates act as a decisive control of Apple and Plum Aphides, and off the Currant Aphides and the Apple Sucker. Their application also considerably reduces the number of Winter Moth and Tortrix Moth, but with regard to the former not sufficient to allow us to give up grease-banding. For Red Spider tar distillates have so far proved valueless.

For Capsid Bugs it is too early to say anything definite. Results obtained in the West of England do not agree with those in Cambridgeshire. In Kent no benefit has resulted where up to $7\frac{1}{2}$ per cent. solutions have been used, but it may yet be shown that a 10 per cent. solution may act as a control for this apple pest, especially where a second late spraying is used. It is hoped that trials now taking place in Kent and West Sussex may settle this point.

In any case a very great advance has been made with these tar distillate sprays as a means not only of cleansing trees of vegetal encumbrances, but as a means of controlling (in winter) some of the most serious pests in their egg stage and in many cases (especially with plums) rendering summer spraying (for insects) unnecessary.

It is interesting to note that out of forty egg masses of Vapourer Moth that I treated with Carbokrimp not a single larva hatched, but in some egg masses great numbers of parasites emerged. This was noticed two years running.

2. *Big Bud in Black Currants.*

The steady spread of the Big Bud disease of black currants, caused by the mite *Eriophyes ribis* during the last forty years, is only too well known. Thirty years ago many parts of this country and Northern Ireland were still free from the disease. Now it occurs in almost all districts. There has, however, been a decided reduction in the last five years, which may be due to methodical treatment. Although known as far back as 1849 in Scotland, the first authentic record was by Professor WESTWOOD in the *Gardeners' Chronicle* in 1869, when the infestation was very prevalent in Yorkshire.

Miss ORMEROD referred to this pest in 1886,* and in her report mentioned as remedies sulphur and lime. In several of her later reports lime and sulphur are mentioned, and she once even suggested Paris green. In 1898 † she gave us the first long account of this mite.

In 1892 ‡ Sir CHARLES WHITEHEAD, Technical Advisor to the Board of Agriculture, pointed to "the rapid increase of this mite during the

* *Report and Observations on Injurious Insects*, 9th Report, pp. 33-35.

† *Ibid.* 21st Report, pp. 141-158.

‡ *Report on Insects and Fungi Injurious to Crops*, No. 11, 1903.

past four years, it being transmitted with cuttings and bushes." The most interesting points in this paper were the recommendation of Paris green as a remedy and the figure of the normal currant glands as galls formed by the mites.

In 1894* NEWSTEAD published his "Recent Investigations of the Currant Bud Mite," adding much to our knowledge of the life-history of the mite at that time.

In 1895 SPENCER PICKERING carried out many experiments with this pest at the Woburn Experimental Farm, and amongst other things used to control it was calcium sulphide, when the foliage was on the bushes, but no beneficial effects were observed. In fact, in his 14th Report (p. 69) in 1914, Mr. PICKERING said that the numerous substances tried as remedies mentioned in the 2nd Report (p. 7) were not successful; and he also showed that hand-picking of swollen buds in a bad attack was ineffectual and also that cutting down affected bushes did no good, for the "new shoots which developed were apparently as badly attacked as those removed."

CECIL WARBURTON as far back as 1902† made a very wise suggestion, namely, "that all stocks and cuttings should be examined by experts and that a certificate of freedom from disease would be of considerable value to the possessor of a fine crop, and buyers would be only too glad to be sure that the cuttings supplied to them came from pure stock; in this manner much would be done to gradually stamp out the disease." Had this advice been followed very much loss would have been saved.

In the same year LEWIS‡ published his valuable paper, "An Account of the Black Currant Mite, with further Observations on its Life-history, and a Report on Experiments in Fumigation with Hydrocyanic Acid Gas." His results with hydrocyanic acid gas were not altogether hopeful; he said, "To sum up the results of these experiments, they showed that fumigation will in most cases diminish the attack by destroying a great many mites, but apparently it had no effect on the eggs and will not entirely get rid of the disease."

Lime-sulphur again came to the fore in 1904, when COLLINGE§ published some of his experiments with spray fluids, as a means of checking this disease. He also experimented with sulphur and soft soap and found the results very encouraging. In 1905|| he recognized that the frequent sprayings with sulphur and soap were too costly, and he then tried a dust of equal parts of unslaked lime and flowers of sulphur and sprays of lime-sulphur and also sulphur and soap.

His summary leaves us very near our present-day position, namely, "that the application of lime and sulphur will keep the mite in check, and if the dusting or spraying is continued will eventually entirely eradicate the pest," and also that "yielded results checked by many

* *British Naturalist*, June 1894.

† *Journal Royal Agricultural Society*, 68, p. 305.

‡ *Journal S.E. Agric. College*, No. 11, pp. 55-60, with plate and figures.

§ *Report on Economic Zoology*, No. 1, 1904, p. 12.

|| *Report on Injurious Insects in the Midlands*, pp. 6-8.

large growers clearly point to the fact that the application of lime and sulphur offers an effective remedy." His final advice in 1908 (5th Report) was to use 1 part of ground lime (unslaked) with 4 parts of sulphur dusted over the bushes when the dew was on them, and two weeks later with 1 part of lime to 8 of sulphur, and again at a similar interval with sulphur alone.

The expense of this treatment and the damage done to the foliage were such that, although some growers adopted it, it never became a general practice.

It was a distinct advance, however, in the control of this pest and undoubtedly formed the basis of more recent experiments. In 1919 the use of lime-sulphur was tried again by LEES * at Long Ashton Research Station, and he found it a partial control at the concentration of 1-12 (sp. gr. 1.025) used in spring when the leaves were "the size of a sixpence," but under his conditions the control was not sufficient to warrant its general use.

In 1923 † LEES recorded his later experiments and stated that they "clearly show the great value of sulphur in controlling mites and its effects seem to be very deadly," and that "the only solution to the problem would appear to be either dusting with fine sulphur or making use of a sulphur cloud."

Also in 1923 the East Malling Research Station commenced a detailed study of the life-history of the Big-Bud Mite in conjunction with a series of spraying experiments in the field, and TYDEMAN ‡ reported as follows: "No particular method of control has given us completely satisfactory results. We have been able, by the use of lime-sulphur in early spring, to reduce the severity of the attacks. While hand-picking has proved a good second in point of success, possibly the labour involved, especially where large units of bushes are concerned, might militate against its utility on an extensive scale." In 1926 MASSEE (working at the same Research Station) published some results of his experiments.§

He tried hand-picking, cutting down bushes, and lime-sulphur sprays. In his summary he says "that the application of a lime-sulphur spray to the currant bushes in the spring, when the flower racemes appear, but before the flowers open, is the most effective measure of controlling the Black Currant Mite yet tried," thus endorsing the opinion of COLLINGE. The spray should be used, just as LEES found, at a concentration of approximately 1-12 (sp. gr. 1.025).

Permanent damage, he found, does not result from using the lime-sulphur at the high concentration of 1 in 12, but "there is evidence of a slight temporary damage which however has not been detrimental to the bushes."

From MASSEE's latest experiments one gathers that this method can be relied on as a very satisfactory control, and it has been found to

* *Ann. Rept. Agric. and Hort. Res. Station, Long Ashton*, 1919.

† *Journal of Pomology and Hort. Science*, iii. No. 2, 1923, pp. 103-105.

‡ *Ann. Rept. E. Malling Res. Station*, 1924, p. 125.

§ *Ibid.* 13th year, pp. 76-80.

be with many growers. The experiments of COLLINGE, PICKERING, and LEES have been thus brought to a successful conclusion.

Some growers have found that although they can control the Big Bud Mite by this treatment, the scorching of the young leaves under certain conditions of frost is a serious matter, for the loss of leaf protection gives the frost more chance of damaging the blossom. In spite of this, the final testing of lime-sulphur as a control is a distinct advance, for there is no doubt that, applied at the right time, it is most effectual.

3. *The Apple Blossom Weevil.*

The control of the Apple Blossom Weevil, the cause of the so-called "Capped Blossom," has long been a vexed question. Several methods were tried, including jarring off the beetles and the capped blossoms, and the employment of various sprays. When the lime-salt wash referred to previously came out, it was noticed in many plantations that this weevil was apparently checked. Control trees showed a much greater amount of "Capped Blossom." It did not appear that the hot-lime wash had any direct effect upon the weevils, for they could be found crawling about with particles of lime sticking to them. Nevertheless, the attack on sprayed trees was generally much less virulent. This was due to the fact that the lime wash retarded the bursting of the buds, and so when the blossoms appeared they developed very rapidly, and the small larvæ were exposed to light and air and so were destroyed. Nevertheless, it could not in any way be claimed that this treatment was a definite control.

As far back as 1897 experiments carried out in the Tyrol in connexion with this apple pest yielded excellent results. Bands made of corrugated paper were placed on the trees and examined month by month, and the returns of trapped weevils were as follows :

April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.
5	1785	4	4	3	9	164	982	223	24	18	3505	2561

In 1922 MILES * published reports of careful experiments in connexion with this pest and concluded his paper with the following remark : "From the foregoing discussion it will be gathered that no single operation can be considered as totally effective in controlling the Apple Blossom Weevil." The same can be said to-day.

In this paper MILES pointed out that the Tyrol results seemed so satisfactory that it was decided to put on a few bands in order to get some indication of the whereabouts and the movements of the weevils, and to circulate among certain growers in Worcestershire the outlines of a scheme for trials of banding.

* *Journ. Pomol. and Hort. Sci.*, iii. No. 1, 1922.

One grower reported catching 55 weevils on March 30, 86 in April, 187 in May, and 5 in June ; but nothing definite came of this.

The matter dropped for a while, until in 1923 MASSEE of the Malling Research Station published a paper on "The Control of the Apple Blossom Weevil." *

The use of poultry (hens) was shown to be of no value, nor jarring, nor spraying with hot lime or lead arsenate. This observer then centred his investigations on trapping methods. Some years previously to MASSEE's experiments the catching of the weevils in sack bands was employed by Mr. SYDNEY LEE of Crockenhill, and he sent me his results, which seemed excellent. Three tables given by MASSEE in connexion with this trapping may be quoted here :

- (1) Number of weevils collected in sixty-four bands each month from May 1921 to April 1922. 1921 : May, 136 ; June, 229 ; July, 233 ; August, 114 ; September, 49 ; October, 105 ; November, 57 ; December, 19 ; 1922 : January, 21 ; February, 35 ; March, 63 ; April, 38.
- (2) From May 1922 to December 1922. May, 136 ; June, 943 ; July, 1090 ; August, 130 ; September, 68 ; October, 110 ; November, 63 ; December (1st week), 8.
- (3) From May 1923 to April 1924. May, 461 ; June, 170 ; July, 1151 ; August, 838 ; September, 395 ; October, 833 ; November, 360 ; December, 59 ; 1924 : January, 54 ; February, 33 ; March, 103 ; April, 107.

Various methods of banding were tried, and he found it was best to tie sack bands around the middle on to the trees. It has always been well known that many weevils crawl down the trees looking for shelter and that many others that fall to the ground will reascend the trees looking for shelter ; thus, by tying the bands in the middle both those descending and those ascending come to shelter.

MASSEE found that sack bands were much more effective than paper bands.

Some seventeen years ago I experimented with the German crinkly paper bands, supplied by Messrs. Bunyard of Maidstone, and found them much more attractive to both Codling Moth and weevil than the old manure sacking then used. This plan not only cost more, but birds, especially Woodpeckers, the Nuthatch and Tits, seriously damaged the bands.

This method of trapping recently put prominently forward by MASSEE has been a great advance in this country, although the process is by no means new. It must not, however, be taken for granted that sack-banding alone will control the Apple Blossom Weevil. It will not do so, as I have too frequently found.

A considerable number of weevils hibernate under rubbish, leaves, and in the soil beneath the trees, weevils that fall with the capped blossoms before they have escaped. Many of these never attempt

* *Journ. Pomol. and Hort. Sci.*, iv. No. 1, 1923.

to reascend the trees until egg-laying time. I have found hundreds in this position in winter; these weevils would fly or crawl up to lay their eggs, and in this way many have been caught in grease-bands. On one occasion I found fifty in a grease-band in April. If we can destroy those that hibernate in or on the soil as well as those trapped by sack-banding, then we get a more definite control.

This can easily be done by the employment of poultry. MASSEE's single experiment showed that hens (White Leghorns) had no effect in checking capped blossoms, and he found that the hens would not take readily to these weevils as food. He says, "After one or two pecks they ignored them." Personally, I have found both White Leghorns and Buff Orpingtons at times will eat them. Ducks, however, are much more useful in this respect, and I have seen plantations greatly benefited by them.

A decided advance has been made in following up the Tyrol experiments on banding, but this, except in conjunction with the destruction of the soil hibernators, will not entirely control this pest. Poultry certainly will not control the trouble alone, nor will banding alone, but the combination of the two certainly will—which is a distinct advance in orchard sanitation.

LECTURE II.

[Read March 13, 1928; Mr. J. C. F. FRYER, M.A., F.E.S., in the Chair.]

4. *Poison Bait for Leather Jackets and Cutworms.*

THE destruction of field and garden crops by such soil-feeding insects as the larvæ of many of the night-flying moths or *Noctuae*, usually known as Cutworms or Surface Larvæ on account of their attacks on the roots and lower parts of the plants, is well known all over the world.

Two species are often very abundant in this country, namely the Heart and Dart Moth and the Turnip Moth.

The Cutworms or Surface Larvæ have been for some time successfully controlled in Canada and the United States by means of poison baits, especially on the Canadian prairies.

The first "baits" used in America were made of Paris green, bran, molasses, to which was added lemon or orange juice.

In 1910 and onwards, after numerous experiments with poison bait, I eventually recommended a "bait" made of bran and arsenate of lead or placing here and there on the attacked land *fresh cut lucerne or clover* steeped in arsenate of lead,* and this proved fairly satisfactory.

The use of these Cutworm "baits" was never widely adopted in this country, partly because the employment of poisons on the land

* *A Text-Book of Agricultural Zoology*, ed. 2, 1913, p. 204.

was illegal and still more from the fear of game birds being destroyed through eating the poisoned bran.

Last year legislation allowed such "baits" to be employed, thus doing away with one objection to their use.

In 1921 PACKARD and THOMPSON* of the United States Department of Agriculture tested the efficiency of bran, poisoned with Paris green upon Crane Fly grub—the larvæ of the Daddy Long Legs, or *Tipulidae*, which we call Leather Jackets.

Of the various poisoned baits they experimented with, the cheapest and most easily mixed was found to be bran 25 lb., Paris green 1 lb., water about 3 gallons, made into a flaky mash. From 10 to 20 lb. of this mash was used to the acre.

The first experiments in Great Britain with Paris green and bran for Leather Jackets appear to have been made in Scotland, also in 1921 by Mr. THOMAS HUNTER in South Argyll. This method which was adopted at the West of Scotland Agricultural College consisted of mixing 1 lb. of Paris green with 30 lb. of bran or "thirds" and moistening the mixture with 2 gallons of water. This quantity was found to be sufficient for an acre of land. To this bait was added two teacupfuls of treacle, the treacle being mixed with the water before it was mixed with the other ingredients. This sweetening of the "bait," it was said, made it more readily consumed by the grubs. The cost was found to be only about 6s. 6d. an acre at that time.

In 1925 the West of Scotland Agricultural College reported † that "This is by far the most hopeful line of attack and excellent results have been obtained in the last two years in the College experiments from the use of Paris green."

In 1925 JONG ‡ in Holland fully confirmed the American and Scotch results.

In 1926 GASOW § carried out experiments in Germany on the destruction of Leather Jackets and found that watering the soil with a solution of 2 to 4 per cent. of liquid ammonia brought the grubs to the surface and that they eventually died, and he also used sodium fluoride, 1 part to 20–40 of bran, which gave excellent results and was, he found, cheaper. RENNIE § in 1927 published further results of experiments in Scotland which were equally successful, and also refers to the results obtained by county organisers and other colleges and by numerous farmers. The employment of this "bait" is now quite a common practice in the Orkneys, where Leather Jackets had long been a plague, and they are now controlled.

Paris green and bran alone have also been used in this country and found quite as successful, and the formula now generally recommended

* "The Grub Pest and Paris Green as a Remedy," *West of Scotland Agricultural College, Bull.* 103.

† "Een Studie over Emelten en hare bestrijding," pp. 89–105, *Plantenziekten-hundige Dienst. Wageningen.*

‡ *Mitteil. Deutsch. Landw. Ges.*, vol. xli. p. 140.

§ *Scottish Journal of Agriculture*, vol. x. April 1927, p. 2, and *North of Scotland Agricultural College, Bull.* 32.

is 1 lb. of Paris green to 28 lb. of bran, this amount being sufficient for an acre of land.

Tested against bran and arsenate of lead it proved distinctly more successful on some oats in 1927. In one or two *very heavy* attacks I have found it advisable to use double the amount to the acre to ensure success, but this is seldom necessary. The addition of molasses does not seem to be essential.

This "bait" should be broadcast towards evening, as the grubs come to the surface and feed by night when out of the soil.

Whilst naphthalene when worked into the ground will destroy Leather Jackets, this poison bran method of baiting is much cheaper and, as far as I have observed, much more effectual. No damage has been observed to game or other birds, and in several cases under observations, where both partridges and pheasants were prevalent, no ill-effects were seen, and the birds were carefully watched by keepers and myself.

This simple remedy for such soil pests is a distinct advance over all other methods of treating these soil insects and can be confidently recommended both for field and garden use.

5. *The Control of Wireworms.*

For years past one has heard of various plans for combating the wireworm pest both in the field and in the garden, where it has long been known to be the cause of much damage. More recently many complaints have been made of their ravages under glass, especially in the ever-increasing area being given up to tomato and cucumber growing, such as in the Worthing and Lea Valley districts and in parts of Kent.

The various methods of control suggested in olden days sometimes acted, and at others they were a total failure; in fact, there was no definite means of control known, either for field, garden, or glass-house.

Years of practical experience and observation have, however, taught us the value of a crop of mustard either ploughed into the land green, when 1-2 feet high, or where it had been fed off by sheep. The effect of the mustard is undoubtedly great, and when fed off by sheep we have the benefit of the sheep as well, consolidating the soil and making it obnoxious to the Click Beetle larvæ. To this day there is probably no better way of cleaning freshly broken pasture land or clover-ley of these larvæ on a large scale. Rolling has also been adopted for years in wireworm attack, and there is no doubt that a ring roll put over an attacked field, both ways, acts as a check to wireworm damage by hindering their movement in the soil. Neither methods can we call a definite control.

At one time a common idea in hop cultivation was to fight the wireworm by applying rape cake or rape nibs to the soil, which was used as a manure as well. This undoubtedly drew many of the wireworms away from the hops for a time, but after some years of observa-

tion I came to the conclusion that the remedy was worse than the evil, for there is no doubt that the rape cake attracted the adults (the Click Beetles) and the wireworms, although drawn away from the hops, actually fattened on the cake. Hop gardens where this was used I found were always most affected with wireworm.

Another remedy once advocated was the use of Mustard Dross. In 1904 I carried out a long series of experiments with this and found that the wireworm, instead of feeding on the Mustard Dross "so ravenously that they burst," as was stated, merely thrived on it.

Until quite recently there have been only two definite ways of killing these pests, no matter whether in the field, garden, or glass-house: that was either to dig about and catch the wireworm and pull it in two or to attract them by special baits, such as pieces of carrot, mangold, or potato marked by a piece of stick, and then kill those drawn to these baits; a plan at one time used quite successfully in hop gardens, and to some extent in ordinary gardens and in glass-house cultivation.

Special zinc cone-shaped traps were made for this purpose, the handle remaining above the ground so that they could easily be pulled up and examined. These proved quite useful in hop and garden cultivation, and for a time took the place of a stick put through the bait so as to mark it.

Considerable good was also done by trapping the adults or Click Beetles, by placing here and there heaps of green stuff, such as cut lucerne or clover covered over with boards or tiles, the Click Beetles, where the land was clean, being attracted to these lures. The beetles could then be easily collected and destroyed. Very large numbers were caught in this way in gardens, nurseries, and hop-yards. Messrs. Webb & Sons, who adopted this method in their nurseries, once reported having taken no less than 300 Click Beetles in one trap; this of course did good.

None of these older plans could be called a definite control.

Later soil fumigants were employed. Various patent preparations claim that they will kill wireworm in the soil. I found using them in hop gardens that none of them killed the wireworm, but they undoubtedly kept the larvæ *pro tem.* away from the growing plants and so, of course, do more or less good. Naphthalene will do this at the rate of 3 cwt. to the acre, but its effect is like that of the patent preparations, and when the fumes die away the wireworms return to carry on their work of destruction. No doubt placed in a closely confined area these soil fumigants will kill them, but not a sufficient number under ordinary field or garden cultivation.

Fortunately a method has now been found by which these serious pests can be combated in a satisfactory way in the garden and under glass, but I doubt if the method is of practical value agriculturally. Enough that it is a very distinct advance horticulturally.

This new method of killing this pest is by the employment of calcium cyanide or, as it is called, Cyanogas. When calcium cyanide

is acted upon by atmospheric water vapour, hydrocyanic acid gas is given off, and this has long been known as a valuable insecticide.

This is a distinct advance in the production of poisonous gas for soil insecticidal purposes.

Calcium cyanide is now quite largely used for fumigating glass-houses, the destruction of soil insects, as a dust (abroad) in the open-air for Aphides, Capsids, and other insects, and as a poison barrier for Locusts, Army Worms, Chinch Bugs; also for the destruction of White Ants, as well as Rats and other ground vermin.

In this country it has not proved a success out of doors as a dust against Hop Aphis and tends to scorch too much. It is, however, as a means of killing wireworms that attention is drawn to it here.

In 1926 a valuable report appeared in the *Journal of Economic Entomology*. It was by HORSFALL and THOMAS* and entitled "A Preliminary Report on the Control of Wireworms on Truck Crops." These investigators found calcium cyanide the best soil fumigant for the control of wireworms, spring treatment giving the best results, and that the most successful results were obtained where the wireworm had reached a previously planted "bait crop."

In the same *Journal* (vol. 19, p. 636) CAMPBELL gives an excellent paper on "The Concentration of Wireworms by Baits before Fumigation with Calcium Cyanide," and before this SPULES dealt with baits to attract wireworms (*ibid.*, 18, p. 703).

The results obtained on beans and other plants in the field were most encouraging: many of the experiments gave 100 per cent. kills.

Thus calcium cyanide and baiting as a means of killing wireworms were placed by these investigators beyond an "idea."

For use over a wide area in this country, *i.e.* for field use, it is too costly, but for horticultural purposes the matter is very different.

The fact that we know how easily wireworms may be assembled by bait traps places them more under our control for this soil fumigation.

In this country MILES has shown that wheat forms an admirable bait, sown in the soil before the plants are set out; the wireworms are drawn to the germinating seed. Having thus got them into a confined space, calcium cyanide is worked into the soil as near the wheat as possible, the fumes readily killing the larvae.

In a later paper, MILES and PETHERBRIDGE† summarized their results as follows:

"Experiments at Boston, Hatfield, and Worthing indicate that wireworms are readily attracted to suitable bait crops and out of a number of bait substances selected for trial germinating wheat proved to be the most efficient. Drilled in at 2 to 4 feet apart, wheat attracts a considerable proportion of the available wireworms in a fortnight to three weeks, depending largely on the soil temperature.

* *Journal of Economic Entomology*, vol. xix. No. 1, Feb. 1926, p. 181.

† "The Control of Wireworm in Glass-houses," *Journal of Ministry of Agriculture*, January 1927.

"Calcium cyanide used at the rate of from $1\frac{1}{2}$ to $3\frac{1}{2}$ lb. per 180 feet in conjunction with a suitable system of baiting, yields a good measure of control. The cost of granular calcium cyanide is about 1s. 3d. per lb. ; to treat a house 180 feet long by 27 feet wide, drilling twelve rows of wheat 2 feet apart and applying $2\frac{1}{2}$ lb. of calcium cyanide per row, would need 30 lb. of material, costing 37s. 6d.

"Results obtained indicate that the finer the soil the more effective the treatment and the nearer the middle of the 'bait' rows the calcium cyanide is deposited the higher the mortality amongst the assembled wireworms."

This soil fumigant can be applied by placing it in holes fairly close together 2 to 3 inches deep, but it is better used with a drill when in the open. The wheat should be drilled in rows 2 feet apart and 2 to 3 inches deep, and a fortnight to three weeks later the cyanide may be applied, by which time the assembled wireworms are ready for destruction.

The germinating wheat at that time being seen makes it easy to get the fumigant in the right place.

Beyond this, it has been found that the adults—the Click Beetles—are attracted to the germinating wheat, and by moisture ; and they are also largely destroyed by the same process.

Field experiments show that the same method may be adopted, using 2 to 3 lb. of calcium cyanide to the 100 yards of "bait" rows, and that in this manner a very large proportion of the wireworms may be destroyed.

The best time for treatment is in October or in March, April or May.

The method will prove of the greatest use in clearing freshly broken land of this insect scourge, on a small scale, such as for growing sweet peas and garden vegetables, as well as for glass-house work.

Certainly a great advance has been made in the control of one of our worst insect pests. The cost of the treatment is comparatively slight when we consider the length of the wireworm's life and the amount of harm they occasion.

This calcium cyanide or Cyanogas is also used for other glass-house purposes as an aerial fumigant.

6. *Wood-lice in Greenhouses, etc.*

Wood-lice, often called Monkey Peas, Slaters, or Sow-bugs, are frequently very harmful in glass-houses, frames, and mushroom houses.

These terrestrial crustacea like damp and dark surroundings. Whilst several are harmful creatures, others act as scavengers.

When not feeding (which they do mainly at night) they hide away under stones, rubbish, and in crevices in the walls and the junction of the woodwork with the bricks or sides of the houses. They are

especially fond of rotting or rotten wood to shelter in, and in many other such places where they are difficult to get at. The damage they do to cucumbers under glass has been well known for years, and also to mushrooms. They also attack such wall fruit as peaches, nectarines, and apricots. Many seedlings and young greenhouse plants suffer from their ravages to a varied extent.

As these animals are almost entirely nocturnal in habit they were soon found not to be easily treated with sprays or dusts, and for years the old method of setting "bait traps" for them was much used. The usual "baits" were scooped-out potatoes, turnips, or oranges, beneath which the wood-lice collected and hid away during the day-time.

In 1898 I experimented with numerous poisons to destroy them, including Paris green mixed up with moist chopped potato, horse manure, and meal; also arsenate of lead, lead chromate, and nicotine mixed with various substances. Mercury bichloride* was also used, and the only poison found at all effective.

Later Voss placed on the market his Phospho-Nicotyl. Although this did much good it never seemed to be a complete success, and nurserymen and gardeners relied largely on the old plan of trapping the wood-lice. Voss's patent was however a distinct advance in this line.

In 1925 † SPEYER published accounts of his entomological investigations and amongst them experiments with poisons for wood-lice. SPEYER found that Paris green was quite ineffective in *moist* baits, and that calcium phosphate and lead chromate had no poisonous effect at all, and sodium fluoride and lead arsenate scarcely any.

Paris green and *dry* bran was however found most effective, and has been since used by many people with complete success. This simple remedy will soon clear large glass-houses, mushroom sheds, and frames of these troublesome enemies.

This poison bait is made of 1 lb. of fine powdered Paris green to 28 lb. of bran; the two have to be thoroughly well mixed together, which may be done by shaking them up in a large closed tin or bottle.

This bait, to be effective, instead of being placed here and there in heaps as was formerly done, is broadcast over the whole surface at the rate of half an ounce to the square yard, and some of it should be sprinkled over the staging and especially under boxes of seedlings.

This dry mixture must be evenly and thoroughly distributed to get really good results, and the soil should not be watered for some days after treatment.

The wood-lice do not seem to die all at once but gradually do so, and in a few days a house may be cleared of them.

This simple method of broadcasting this bait and its cheapness is a great advance on the old rather uncertain methods of control previously referred to.

* *A Text-Book of Agricultural Zoology*, 4th ed., p. 109.

† *Experiment and Research Station, Cheshunt*, 10th Annual Report, 1924, p. 106 (1925).

P R O S P E C T U S
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It may be mentioned that several species of wood-lice are obnoxious in this country in glass-houses. The commonest of these are *Armadillidium vulgare*, *Oniscus ascellus*, and *Porcellio scaber*.

In some districts another *Armadillidium* (*A. speyeri*) is also harmful and may even entirely take the place of the other species, notably in the Lea Valley.

7. Red Spiders and their Control.

Red Spiders are common pests in glass-houses to vines, cucumbers, melons, tomatoes, beans, strawberries, carnations, and several other flowers, including roses; violets in frames may also suffer severely from them. They are also at times very harmful out of doors to hops, apples, plums, and gooseberries.

The Glass-house and Hop Red Spider is the same creature—the web-spinning *Tetranychus telarius*. At one time the Hop Red Spider was considered distinct and was known as *Tetranychus althaeae*.

The two worst species on fruit trees are the Apple and Plum Red Spider (*Paratetranychus pilosus*) and the Gooseberry and Currant Red Spider (*Bryobia ribis*). Another Red Spider is often very destructive to ivy on houses, *Bryobia preciosa*. This has been said to be the same as the Ribes species, but I have never been able to transfer it to gooseberries or vice versa. If it (*preciosa*) is the same it must be a very distinct biological form.

Numerous methods have been adopted for controlling these *Tetranychus* pests, but all have been, until quite recently, only partially successful. None had any effect upon the Red Spider eggs. Even tar distillates at double the normal strength have so far failed to kill them on fruit trees.*

There are very marked differences between the *Tetranychus* on the vine, melon, cucumber, tomato, and hop, *Paratetranychus* of the apple and plum, and *Bryobia* of Ribes and ivy.

Tetranychus telarius forms a very distinct fine webbing on, in, and beneath which the Red Spiders live and breed and lay their eggs during the spring, summer, and autumn.

The hibernation of this species in glass-houses takes place in cracks and crevices in woodwork and in any sticks or canes that may remain about. In hops they hibernate in crevices in the poles, and that is why Red Spider is always worst in polled gardens. They may also be found in mature or immature stages in the soil and in the hollow of the hop stubs.

SPEYER found that under glass they do not hibernate in the soil. Under glass they may be active and breed all the year round if the temperature is right, but especially become active in January and February.

They also live on many wild plants, such as wild violets and docks.

* Recent investigations show that "Volck" has the desired effect.

In summer the development is rapid, ranging from ten to sixteen days from the laying of the egg to mature mites. Many generations occur, and as these overlap many sprayings are necessary as long as we cannot kill the eggs.

Of the two fruit-feeding kinds, the *Paratetranychus pilosus* passes the winter in the egg stage on shoots and twigs and the branches of the apple and plum, often in dense masses. The gooseberry species (*Bryobia ribis*) partly as eggs and partly as immature mites; in any case the eggs of this species all hatch very early, usually in February.

The old method of controlling Red Spider under glass was fumigation with sulphur, sometimes by means of special machines, at others by simply painting the hot-water pipes with flowers of sulphur. This did a little good, but unless carefully done would often be the cause of a lot of harm to the plants.

For hops and for plants under glass a common Red Spider wash was liver of sulphur; this latter until recently was also used for fruit trees. Then lime-sulphur took its place.

For hops liver of sulphur and soft soap is used with only partial success. Later dusting came in and certain sulphur dusts killed a fair number, but none acted as a definite control.

In America it was found that the Red Spider wash was much improved by the addition of white wheat flour paste. This was tried here on hops, and although the result was certainly better than when no flour paste was added it was still not a definite control, as the eggs under the webbing were unharmed.

The same was found to be the case under glass, but it acted rather better than in the open. From 5 to 10 lb. of the best flour made into a paste was used to 100 gallons of water, in which the sulphur was incorporated.

The special difficulties have been to get some treatment for Red Spider under glass which will not only kill the adults and immature forms, but also the eggs in the webbing. The same applies to hops.

SPEYER,* who has done valuable work on this subject, advised a naphthalene treatment. His recommendation is to use pure commercial white flake naphthalene in a fine state of division, the best form to use being known as Commercial Grade 16. This naphthalene is sufficiently fine to pass through a sieve of 16 meshes to the inch.

The quantity found necessary is 3 lb. of the naphthalene to each border of 100 feet of house, and if the house is leaky an extra 6 lb. along the path. The matter of temperature is important; during fumigation it should never fall below 74° F., and the fumigation should be done late in the afternoon and the house kept closed until next morning. It has been found to be essential to have the house and plants moist during the fumigation. If the humidity and temperature are not right damage may be done to the plants.

Another dose may have to be given three weeks later.

* *Tenth Annual Report, Experiment and Research Station, Cheshunt, 1928*, p. 89.

This treatment is certainly fatal to the acari and to most of the eggs. The fruit (cucumbers, melons, and tomatos) may be scented with naphthalene, but the scent goes off in twenty-four hours if the fruit is placed in the fresh air.

I have found strawberries under glass when attacked by Red Spider easily cleared of them by this method.

There is no doubt that this is a distinct advance in glass-house fumigation for Red Spider on all plants. It is however no help to us out of doors for hops.

From America comes a preparation called "Volck," an oil which does not harm such delicate leaves as those of cucumbers ; at first it makes them look none too well, but in a short time they look better than before spraying.

Various leaves, such as currants, cyclamen, chrysanthemum cuttings, strawberry and others, have a curious shiny appearance after "Volck" spraying, but this does not seem to do any harm.

It certainly has proved an excellent killer of *Tetranychus telarius* and seems to penetrate right into the webbing, which other washes do not do, and in some trials I have made it certainly destroyed all the eggs. In some recent trials with *Paratetranychus* eggs on apple, after being sprayed with "Volck," none hatched.

There is little doubt that if it will act in this way on cucumbers and strawberries, it might be used for hops and so prove at last a safe remedy for the Hop Red Spider.

Both the finding of the use of naphthalene for greenhouse work and the American preparation, "Volck," which *can* be used out of doors, are considerable steps forward in the control of Red Spider, particularly on account of their power of penetrating to the eggs hidden beneath the webbing.

MECONOPSES AND GENTIANS AT DEVONHALL, PERTHSHIRE.

By ANDREW HARLEY, F.R.H.S.

IT is surprising that so few grow the exceedingly handsome Meconopses or Himalayan Poppies. The average gardener seems to have the impression that they are difficult plants to grow, but this is not so. Most of them are as easily raised from seed as most of the biennials one is accustomed to raise every year. In the drier climate of the south a little more difficulty may be experienced in growing the Meconopses, as they require a good deal of moisture during their growing period, but I believe any garden that will grow Rhododendrons, or such plants as require a fair amount of moisture, would be suitable to grow and flower these plants satisfactorily.

These beautiful flowers do well in many gardens in Scotland, and in my garden, Devonhall, in Perthshire, they make a lovely show from April till the end of October. The garden is situated at the entrance to Glendevon at the foot of the Ochil Hills, about 700 feet altitude. The soil is rather stony and there is a certain amount of peat in it, there being a peat bog within about 300 yards of the garden. Being situated at the foot of a range of hills, we get a fair amount of rain during the summer, and the ground very seldom gets very dry.

Most of the Meconopses growing in my garden are biennials, or monocarpic, as they die after flowering.

The following species have grown and flowered well for a number of years :

M. integrifolia.—Two forms grow : one with large yellow flowers crinkled at the edges, the other with flowers somewhat smaller and more globular. These are the first of the genus to flower, coming into bloom in April, and the cold weather we sometimes get at that time does not affect their flowers (fig. 27).

M. simplicifolia, Bailey's form—not to be confused with *M. Baileyi*, introduced a few years ago by KINGDON WARD and which is proving perennial—flowers in May, and I think is one of the prettiest blue Meconopses in cultivation (fig. 28).

In June we have *M. Pratii*, in colours from white and blue to chocolate shades. This perhaps is one of the easiest to cultivate, and another, sometimes called *M. rigidiuscula* (blue flowers), which I think is an extra strong-growing form of *M. Pratii*.

M. rudis.—Blue and lavender shades.

These are followed by *M. impedita*, a small species of about 1 foot high with four-petalled flowers, dark blue with golden anthers ; *M. aculeata* with divided fern-like foliage and flowers varying in

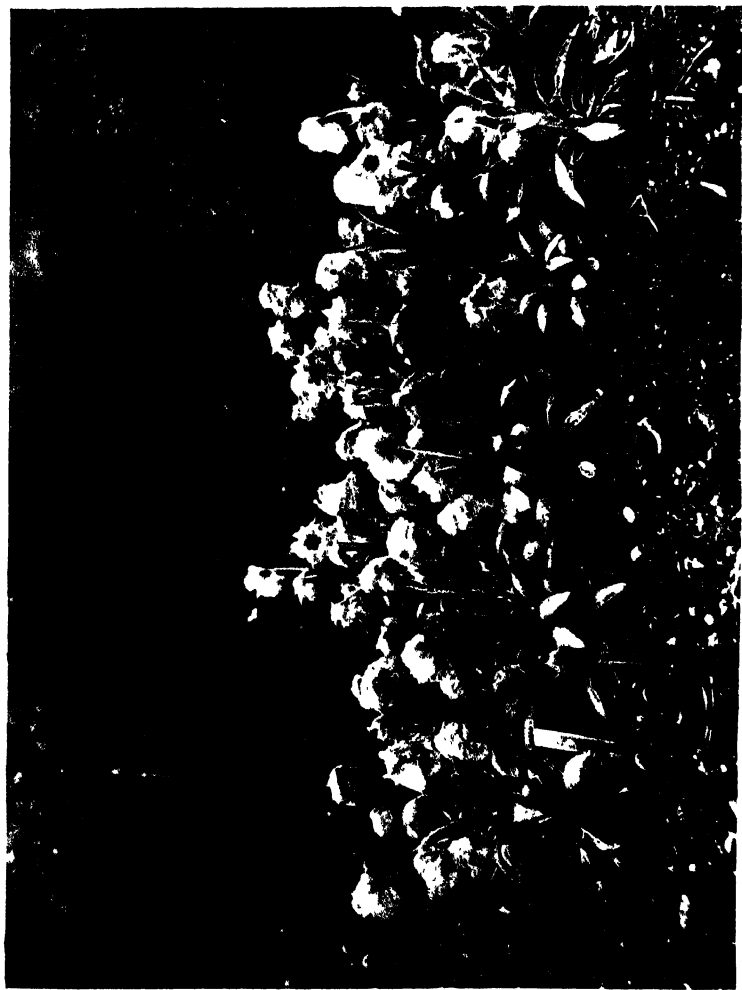


FIG. 27.-- *MIMOSA PUDICA* IN FLORATION.

[To face p. 220.]



FIG. 28.—*MECONOPSIS SIMPLICIFOLIA*.
(Perennial form.)

colour from blue to purple; and *M. latifolia* with many lovely sky-blue flowers on its stem.

In August *M. paniculata* (fig. 29), 5 to 6 feet high, with pale yellow flowers, comes into flower, and *M. nepalensis*, 4 to 5 feet high, with claret-coloured flowers.

The last to flower is *M. Wallichii* (fig. 30), flowering from August till the end of October, growing from 5 to 6 feet high, with lovely light blue flowers in its best forms, an occasional pure white-flowered plant, and others of a rather muddy magenta.

Of the perennial species growing in my garden, there is a form of *M. simplicifolia* (fig. 28) with flowers of a purple shade which opens its flowers at the end of April, followed by *M. grandis* (fig. 31) at the end of May, with violet- to slatey-coloured flowers on stems 3 feet high. This is followed by *M. simplicifolia*, a yellow form—perennial—raised in my garden a few years ago, and Farrer's harebell poppy, *M. quintuplinervia*, with bell-shaped lavender-blue flowers (fig. 32). The last perennial form to flower is *M. Baileyi*, carrying its lovely blue flowers on stems about 4 feet high (fig. 33).

The whole of these mentioned species seed very freely with the exception of *M. grandis*, which is a very shy seeder. *M. quintuplinervia* and *M. impedita* have much smaller capsules and do not give as much seed as the other varieties. All of the other species give very large quantities of seed, which should be saved as soon as it becomes ripe. I have noticed, should the weather be very wet at the time, that the seed of such species as *M. integrifolia*, which has large seed capsules packed with seed, if left too long in the capsules, sometimes starts to germinate. In such cases the seed should be sown at once; if kept till the spring before sowing, very few of the seeds germinate. The plants when setting seed should be gone over at least once a week and any capsules showing signs of splitting should be taken off and dried, when the seed will shake out. I have tried sowing the seed in the autumn and pricking out into boxes, but the resulting plants were not much stronger than those raised from seed in early spring, and there is the trouble of looking after the seedlings all through the winter. The seed of the various species is sown at the end of February in 6-inch pots and placed in a vinery which is kept at a temperature of about 60°. Most of the seed will germinate in about ten to fourteen days. It may happen that the seed of a particular variety does not germinate in the spring; if so, the pots are placed in a cold frame about the end of April and left there till the following spring, when they are brought back into heat again, and, if the seed is fertile, a good germination takes place. After the seedlings have made their true leaves, they are pricked out into boxes, which should be about 4 inches deep, well drained, and filled with a compost of loam, leaf-mould, and sand. Meconopses having tap roots should never be grown in shallow boxes or seed pans. The seedlings are grown on in heat till about the beginning of April, when they are placed in cold frames and gradually hardened off. They must be planted out during May, by which time

the tap roots will have nearly reached the bottom of the box they were pricked out in. I think the essential thing in growing *Meconopses* is not to let the seedlings get a check in any way ; plant them out in their permanent position as soon as large enough to handle, and they will grow straight away and make good plants to flower the following season.

I am not at all in favour of pricking the seedlings into frames and planting them out the following season, which is the time they should flower, as lifting them at that time gives them a severe check, and, should they come into flower, the flowering stems will be short and with poor flowers. Even although they may not flower till the third year, the plants have not the same constitution as those planted out in May from the seed boxes. Anyone who has seen a self-sown seedling will have observed how sturdy a plant it is and how well it flowers.

In the case of *M. Wallichii* and *M. paniculata*, I do not raise many boxes of seedlings. Having a large quantity of seed from these species, this is scattered in beds of *Rhododendrons* in early spring, after the beds have been cleaned of any weeds growing in them, and hundreds of seedlings come up in early summer. These are thinned out in the autumn and planted in other positions in the garden. Many of those left among the *Rhododendrons* will flower the following year, and those that do not, make good growth and give good flowering spikes in their third year.

All species of *Meconopsis* like a moist soil with perhaps the exception of *M. latifolia*. This species will grow best in soil that is fairly dry, and the best plants I have seen grew in a rock garden where the plants had seeded themselves into crevices among the rocks, where their tap roots had gone deep down between the rocks. Most of the plants I have growing of this species are from self-sown seedlings growing among stones where they have seeded and flowered during the last seven years. After as many of the seedlings as required are pricked out from their seed pots into boxes, a great many of the seedlings are sometimes left in the pots. The ball of soil with the seedlings is knocked out and planted into a spare corner in the garden and come in useful the following spring to fill up any blanks, or to make other beds. These seedlings are lifted early next spring, just when growth starts, and flower the following year. They do not make such good plants as those put out from the seed boxes, but come in useful for seed purposes. Seeds of such species as *Prattii*, *integrifolia*, *simplicifolia*, etc., left over from the seed packets are sown outside to take their chance of germinating. Owing to the wet summer last year, hundreds of seedlings came up ; these have come through the winter, and within the last week or two a good few boxes have been filled with the seedlings, which will be planted out in early May in the position they are to flower in next year.

Although *Meconopses* like a damp soil, they will not stand a soil that is water-logged during winter, especially *M. Wallichii*,

M. paniculata, and *M. nepalensis*; these three species grow practically all winter and do not lose their leaves like *M. Prattii*, *latifolia*, *rudis*, etc. The leaves collect the damp and rot off at the crowns. I have lost dozens of plants which were planted on the flat where the soil was not well drained, whereas plants growing close to them, but on a slight slope, did not damp off at all. *M. integrifolia* and *M. simplicifolia*, although not quite so liable to damp off in a wet winter, should not be grown where the soil holds much water in the winter months. *M. rudis*, *Prattii*, *aculeata*, etc., whose leaves completely die down in the autumn, are not affected in the same manner and will stand a much damper winter position than those species mentioned. Great care must be taken to mark the positions where *M. Prattii* and the other species are growing that lose their leaves during the winter months, otherwise they may be dug up by mistake where the borders are being dug during the winter and early spring, before they show through the ground. Meconopses having tap roots require a good depth of soil, especially in the south of England, or where the soil dries quickly. If the soil is well trenched so that it keeps its moisture, most of the species should grow. For such species as *M. Wallichii* and *paniculata*, whose roots will go deep down, I believe a layer of old manure put well down beneath the soil will help them when grown in gardens where the climatic conditions are much warmer and drier than we get in Perthshire.

I have noticed plants growing among Rhododendrons in my garden, where the beds get a top dressing of old manure and leaf mould every third year, grow very strong in those positions. I must admit that in my garden the soil is not trenched where Meconopses grow, but simply dug over before the seedlings are put in, but, as I mentioned before, the garden gets a good deal of moisture even in what we would call a good summer in Scotland, and, at the elevation and nearness to hills, the conditions are more Alpine than in the south.

Meconopsis integrifolia is a species from Western China which comes into flower about the end of April and continues flowering till the middle of June. I grow two forms of this Meconopsis. One form has large light yellow flowers, saucer-shaped. The blooms on well-grown plants measure 7 to 8 inches in diameter, and I have had as many as thirty-eight flowers on one plant. The other form I grow has the flowers more cup-shaped and not so large. This form sets very few fertile seeds, whereas the large-flowered form gives a large quantity of good seed. *M. integrifolia* I consider one of the best of the early-flowering species. It is easily grown, and the cold weather we usually get in Scotland in April and May does not affect the flowers. This species is a biennial, and if the seed is sown in early spring and the plants put out by the end of May, most of them will flower during the following year.

Meconopsis simplicifolia, Bailey's form.—This species is also a biennial, or monocarpic, and I consider it one of the prettiest of the blue

poppies. The flowers come straight from the neck of the stock, one flower on each stem. The stems are about 2 feet in height, bearing a lovely sky-blue flower 3 to 4 inches in diameter, the colour being a darker blue in the opening buds on the back of the petals. This species was collected by Major BAILEY on the borders of Tibet in 1913, and as it seeds freely there should be no difficulty in keeping it in cultivation if seed is sown every spring. It makes a very pretty combination if a bed is planted with the two species, *M. integrifolia* and *M. simplicifolia* (Bailey's form); the yellow and the blue flowers, flowering at the same time, make a pretty picture.

Meconopsis simplicifolia.—Although not as pretty as Bailey's form, this is a true perennial, and I have plants growing which have flowered during the last eight years. The flowers are a slatey-purple, one flower on each stem. It opens its first flowers at the end of April and is in flower for about six weeks, but does not set quite as much seed as Bailey's form.

Meconopsis hybrid (?)—In 1925 I had a bed of *M. simplicifolia* (Bailey's form) in flower from seedlings from home-saved seed planted the previous year, and much to my surprise one of the seedlings had flowers of a pale yellow colour; all the other plants had flowers of the usual blue of Bailey's form. The whole of the plants in this bed flowered, set seed and died, excepting the plant which had the yellow flowers. This plant did not die, but grew on and flowered the following year, 1926, and it again flowered last year, 1927. The first year it flowered it did not give any fertile seed, but in 1926 it set a few seeds, three of which germinated. The seedlings have been planted out, and I am looking forward to seeing them flower this summer. The first year this plant flowered I thought it might be a hybrid between *M. integrifolia* and *M. simplicifolia* (Bailey's form), the colour of the flowers being yellow but of the same habit as *M. simplicifolia* with the single flower on each stem; but both species are biennial, whereas this plant is perennial, having flowered during the last three years.

Captain KINGDON WARD saw the plant flowering in my garden last summer and told me it resembled the 'Ivory Poppy' K.W. 5766, a very rare plant of which he saw only seven specimens, which set practically no seed. This plant is a mystery to me, and I should like to hear if anyone else has raised a yellow form of *M. simplicifolia* from seed of Bailey's form of this Poppy.

Meconopsis grandis.—This species is a perennial, having flowered in my garden during the last eight years. The flowers vary in colour from a rich violet to dull slatey tones and are 4 to 5 inches in diameter on stems over 3 feet high. It is a good grower but a very shy seeder. I find young plants always set a few seed capsules, but my original plant has not given me any fertile seed during the last three years although the blooms were hand-fertilized. This species flowers in June, and I am afraid it will never become a very common plant owing to the difficulty in getting seed: which is a pity, as it is a lovely species.



FIG. 29.—*MECONOPSIS PANICULATA*.

[To face p. 224.



FIG. 30. — *MECONOPSIS WALLICHII*.



FIG. 31.- MECONOPSIS GRANDIS.



FIG. 32.—MECONOPSIS QUINTUPLINERVIA.

[To face p. 225.

Meconopsis quintuplinervia.—This species is also perennial and has single bell-shaped nodding flowers of lavender-blue on stems about 18 inches high. It is a native of the Kansu-Tibet border, growing at an elevation of 9,000 to 13,000 feet in the Alpine turf.

The late Mr. FARRER gave it the name of the 'Harebell Poppy,' and although this species is not so showy as some of the other species, fortunately it is a perennial, and after being established goes on increasing every year. It prefers a well-drained, stony soil and, with me, is growing among some plants of Rhododendrons, which position appears to suit it, as it is now running all through the Rhododendrons.

This species blooms during May and also gives a few blooms in the autumn. It does not seed so profusely as some of the other species, and the capsule is rather small and therefore does not contain a large quantity of seed. I find that if the seed is sown in early spring some of the plants will flower in the autumn of the same year, and vary in size of flower and shade of colour.

Meconopsis Pratii.—This is a biennial growing from 15 to 18 inches high. The flowers vary very much in colour, from a pretty shade of blue to purple. I have also some plants which have flowers of a deep chocolate colour, and others a pure white. There appears to be quite a lot of poor forms of this species growing in this country with small purple- or slatey-coloured flowers, which are not worth growing compared to the forms which give flowers of about 2 inches diameter of a rich blue shade. This Poppy, flowering in June and July, sets a large quantity of seed, and the stems, foliage and seed capsules are very prickly. The white form I grow comes fairly true from seed, for about 90 per cent. of the seedlings give white flowers; the remainder are of a good pale blue colour.

In saving seed of this species I always mark the plants which have large flowers of a good colour, and find the seedlings from this seed when they flower are pretty true to their parents.

I grow a plant under the name *M. rigidiuscula*; it is very like *M. Pratii* but grows taller—over 2 feet high. If *M. Pratii* is prickly to collect seed from, *M. rigidiuscula* is very much more so, and one would almost require to wear gloves when taking off the seed.

Meconopsis rudis is also a biennial very like *M. Pratii*, with clear blue flowers, but can be distinguished from *M. Pratii* by the black spines on the leaves. It is a very free seeder and flowers at the same time as *M. Pratii*.

I have a form named *M. racemosa* which is not unlike *M. Pratii*, but is not so robust, only growing about 1 foot to 15 inches high. The flowers are a pretty lavender-blue, and the seed capsules are smaller and not so prickly as *M. Pratii*.

Meconopsis latifolia, sometimes called the 'Kashmir Poppy,' is one of the few species that will grow in a dry situation, and I think it one of the most beautiful species I grow. The flowers are a lovely shade of Cambridge blue on stout stems up to 2 feet high. It commences to flower at the end of June, continuing till August, and produces

a large quantity of seed. I find it does not do well in a damp soil that suits most of the other species, but is much happier among the stones in the rock garden, where it will seed itself, and the seedlings usually produce the finest plants.

My plants have been growing in the same position, a corner of the rock garden, for the last seven years, where it seeds itself and flowers every year. This species is also a biennial.

Meconopsis aculeata is another from W. Himalaya of the biennial Poppies, growing about 18 inches high. In the best plants the flowers are normally sky-blue, but the seedlings sometimes have flowers of a reddish-purple colour, and seed should be saved only from the best coloured flowers. The foliage is quite distinct from that of the other blue species, the leaves being much more cut or fern-like. It is a free seeder, but the capsules are smaller than *M. Prattii* and *M. latifolia*.

Meconopsis impedita is a native of Eastern Tibet and is one of the smallest species I grow. It throws up single stems about 9 inches high which have dark blue flowers with golden anthers. This species flowers in June. The seed capsules are rather small and do not contain very many seeds.

Meconopsis Baileyi was raised from seed sent home by KINGDON WARD in 1924. The seedlings were raised in 1925 and flowered the following year. The seedlings which flowered only made one crown and, after setting seed, died, but the plants that did not flower made three to four crowns, most of which flowered last year.

I think we may take it that this species is going to prove perennial, and the plants that flowered last year have made side shoots which should flower this summer. This species has flower stems about 4 feet high and the flowers are a lovely sky-blue with golden anthers. *M. Baileyi* gives a large quantity of seed, and as I believe it will prove to be perennial there should be plenty of this species in the country in a year or two.

Meconopsis nepalensis.—The foliage of this species is somewhat like that of *M. Wallichii*, but the hairs on the leaves are more silvery and, like *M. Wallichii*, the flowers have four petals. It grows about 4½ feet high; the flowers are claret colour, and in shape resemble those of *M. paniculata*, but are even more tubular. The stem leaves are more numerous than those of *M. Wallichii*.

A curious thing I notice about the petals is that they do not fall off so readily as in other species, but fade on the seed capsule, and unless these faded petals are picked off they are apt to rot the seed capsule. The seed capsules have very dark brown hairs, quite different from those of *M. paniculata*, which are pale yellow.

Meconopsis paniculata is a robust-growing biennial 5 to 6 feet in height, having stout stems with pendent yellow flowers. This species comes into flower in July, a week or two before *M. Wallichii*, and continues in flower for five to six weeks.

I grow two varieties of *M. paniculata*; one of them has smaller

flowers and the foliage is very silvery. The other variety is a stronger-growing plant with reddish hairs on the leaves, and on some of the plants the yellow flowers are slightly spotted with bronze. This species is a very free seeder.

Meconopsis Wallichii is the last species to flower in my garden. It commences to flower in August and goes on flowering till cut down by frost. Well-grown plants are over 6 feet high. The flowers are variable in colour, ranging from pale blue to a reddish-slate colour, the most attractive being, I think, those of a pale sky-blue colour. Of the hundreds of plants growing in my garden I find every year one or two plants having pure white flowers; these are always the first plants to open their flowers, but a curious thing with these white forms is that they never set any seed. For the last few years I have sown seed saved from the best coloured flowers, and while this helps to improve the colour I find it impossible to get rid altogether of the poorer coloured flowers. *M. Wallichii* is a very free seeder and I secure a large quantity of seed every year. I scatter this seed in beds in early spring where Rhododendrons are growing, which is never hoed, but hand-weeded if necessary, and this method gives me in the autumn a large quantity of healthy seedlings, and where they are growing too crowded I lift the seedlings and plant them into positions I want them to flower in the following summer.

M. Wallichii and *M. paniculata* are very suitable for growing among Azaleas or Rhododendrons. The soil seems to suit them and they give an interest to the beds after the Azaleas and Rhododendrons are out of bloom.

The same soil and climatic conditions that suit Meconopses I find also suit most of the Gentians, especially the Chinese species.

Gentiana sino-ornata increases very quickly, and I find the best way to propagate it is to lift it in early spring in the month of March, and by shaking out even a small clump you get dozens of small plants, which, if planted about 6 inches apart, forms a solid mass by the autumn. This species, flowering so late, sets very little seed, whereas *G. Farreri* sets a large quantity of seed. The seed of *G. Farreri* is sown in heat about the end of February. The seed being very fine should be sown rather thinly, as it germinates very freely in ten or fourteen days. The seedlings are pricked out into boxes, kept in heat for a few weeks, then hardened off in a cold frame, and planted out about the end of June, and most of the seedlings flower the following year.

I have been experimenting for the last two or three years in growing this species in different parts of the garden and find it does best in full sun in a stony soil which is always moist even in a dry summer. In such a situation the leaves never go brown at flowering time, as sometimes happens if growing in soil that dries up quickly. Care should be taken in planting these Gentians from the seedling boxes, as they make few long, fine, thread roots, and should be lifted

with a good ball of soil to prevent breaking these roots. The bed of seedlings should be watched early the following spring, as the frost during the winter is apt to throw them out of the soil, and they require to be firmed up again. A top dressing of old potting soil about $\frac{1}{2}$ inch deep is beneficial to the roots, which are near the surface, and helps to keep the cold winds in early spring from drying them up.

This Gentian can be propagated by cuttings 2 to 3 inches long in the spring, but I find plants raised from seed grow much better and have a much stronger constitution. *G. prolata*, *G. hexaphylla*, and *G. Purdomii* are also raised from seed and treated in the same manner. *G. sikkimensis* and *G. stragulata* also set seed, but I find these are easily propagated by cuttings taken in July or August, and if kept in a cold frame will have made good roots by spring when they are planted out.

The following notes are the result of personal observation on some of the Gentians growing in my garden in Perthshire :

Gentiana Farreri (fig. 34)—found by the late REGINALD FARRER on the Ardjeri Alps in 1914—is, I consider, one of the best of the late-flowering Gentians. This species was flowered for the first time in this country in the Royal Botanic Garden, Edinburgh, during the autumn of 1916 from seed, taken from a dried specimen, sent home by Mr. FARRER, who found it growing at an altitude of over 10,000 feet. It comes into growth in the early spring and is not affected by any of the spring frosts. I have seen it come through 15° of frost after it had made 2 or 3 inches of growth in early spring without harm in any way.

In my garden it commences to flower in August and continues till cut down by frost at the end of October.

I am indebted to the Edinburgh Botanic Garden for the first plant I had of *G. Farreri*. This flowered in my garden in 1917 and set seed, and the hundreds of plants growing now have been all raised from seed. I find raising this species by seed much better than by cuttings, as you get much stronger plants and most of the seedlings flower within eighteen months of sowing the seed. The seedlings vary very much in size of flower and colour. You get all the shades of blue, from dark to light blue, and some flowers almost white.

For the last year or two I have been sowing seed saved from the largest and best-coloured flowers, and think the flowers I get now an improvement on my original plant. The flowering shoots of this species grow from 6 inches to about 9 inches long with six to eight flowers on each stem, the one at the apex flowering first. Some of the seedlings are much later in coming into flower than others, and I find these late-flowering plants were still in flower last year till the middle of November.

On a sunny day in the autumn I notice the bees are very busy gathering pollen from the flowers, and a curious thing is that they very seldom go to an open flower but seem to prefer a flower that has not yet opened, when they light on the top of it and press their way down the tube to get at the pollen, which I think means that the pollen is ripe before the flowers open.

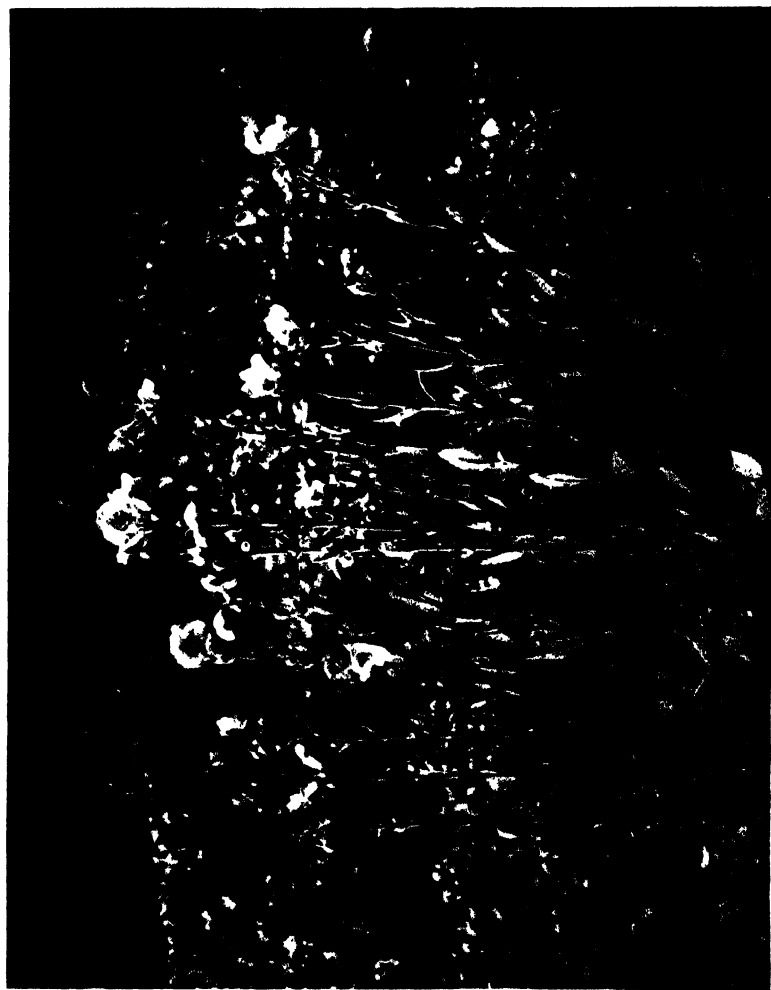


FIG. 33.—*MECONOPSIS BAILEYI*.



FIG. 34.- GENTIANA FARRERI.

[To face p. 229.]

My plants set a large quantity of seed every year which ripens very quickly after the flowers fade, and if the weather should be very wet I open the flowers, and if the seed capsules are beginning to turn brown cut them off and lay them in the sun for a day or two, when the capsule will open and the seed shake out. If the weather is dry, a few days after the flowers fade the pistil will lengthen and protrude about 1 inch through the faded flower and the capsule very soon gapes open and you require to secure the seed before it is blown out.

Gentiana sino-ornata is a native of Yunnan, discovered by G. FORREST in 1904 growing at an altitude of about 14,000 feet, and flowered in the Edinburgh Botanic Garden in 1912. It received an award of merit at the R.H.S. when shown in 1915.

I can never make up my mind whether *G. Farreri* or *G. sino-ornata* is the prettier of the two species. When *G. Farreri* is in full flower in early September I think nothing can beat it, but when *G. sino-ornata* is in full flower a month to six weeks later it is difficult to say which is the better of the two species. The flowers are about the same size as *G. Farreri*, but much darker blue and do not vary in colour in the same way.

I am also indebted to the Edinburgh Botanic Garden for my first plant of this species, and since I got the plant, growing in a 2-inch pot, I have increased it by many hundreds.

G. sino-ornata, unlike *G. Farreri*, has thick roots producing many rooting stolons from a primary central rosette which produce axillary rosettes at the rooting nodes. A plant of about 6 inches diameter, if lifted in early spring and shaken out, will give thirty to forty rooting pieces, by which means one can soon get a large stock of this species.

Owing to its late flowering this Gentian ripens very little seed. I wanted to find out if this species would vary as much in size and colour of flowers from seedlings as *G. Farreri* did, and lifted a few flowering plants and grew them in a cold frame, and by hand fertilization got a few capsules of seed which was sown, but I found very little difference in the colour of the flowers on the seedlings.

A few years ago I lifted a few clumps of this Gentian in the spring, and on dividing them up I got sufficient plants to plant out a bed 30 feet long by 7 feet wide. These small pieces were put in 6 inches apart, and within three years this bed was a solid mass, and when in full flower in October, the bed is a sheet of blue, so much so that one can scarcely see the green foliage of the plants. The profusion of the deep blue trumpet-shaped flowers with their stripes, carrying their heads erect and going on flowering till cut down by hard frost, is a wonderful sight.

A year or two ago we had during a night at the end of October a fall of snow about half an inch deep. The following morning, when the sun came out, the flowers of the Gentian protruding through the carpet of snow were full out, making an extraordinarily pretty picture.

Both *G. Farreri* and *G. sino-ornata* are very sensitive to changes

in temperature. During the day in sunshine the flowers are full open, but if the temperature falls and clouds obscure the sun the flowers at once close. If the atmosphere is dry and warm the flowers will open although there is no sun, and I have seen them remaining open after sunset in the month of October should the day be mild and dry.

A year or two ago I got a plant of WARD'S *G. sino-ornata*, K.W. 4859. This plant flowers at least a month before FORREST'S *sino-ornata* Gentian, and has the same habit of increasing by rooting stolons. The flowers on the plant I have are a much lighter blue and not so attractive as FORREST'S type. I was able to get some seed from this plant last year, which I have sown, and hope to get some better coloured forms from the seedlings when they flower next year.

Gentiana hexaphylla (fig. 35) is another of the late-flowering species flowering in my garden in August, two to three weeks before *G. Farreri*. The late Mr. FARRER saw this most beautiful Gentian very abundant in the higher alpine turf in Tibet, where it literally turns the turf to a sea of blue with the profusion of its pale, clear, water-blue trumpets, delicately lined. The leaves are in whorls of five, the stems forming a denser mass than either *G. Farreri* or *G. sino-ornata*.

The young growth of this species is more like a *Sedum* with its whorled leaves than a Gentian. The flowers, each poised singly on stems 6 to 8 inches long, are about $1\frac{1}{2}$ inches long with a six-lobed corolla $\frac{3}{4}$ inch wide, and are of a deeper shade of blue than *G. Farreri*. This Gentian, with me, seeds freely, and some of the seedlings flower when about two years old. I find this species can be increased very easily in the same manner as *G. sino-ornata*. I lifted a plant last autumn, and after shaking the soil from its roots, I got over three dozen separate pieces with good roots, which were potted up and have been planted out this spring.

Gentiana prolata is another species that opens its flowers in the month of August and is not unlike a dwarf form of *G. Farreri*. This species is a very free flowerer and is in flower from August till the end of October, and when planted in a mass of a dozen plants or so makes a very pretty show. It is a native of Bhotan and has dwarf, prostrate stems 3 to 4 inches long, which have flowers at the end and sides of each shoot. These flowers are $1\frac{1}{2}$ inches long with a five-lobed corolla, pale blue.

This species seeds freely and can be flowered in about eighteen months from seed sown in early spring. It is a Himalayan plant.

Gentiana Veitchiorum.—This Gentian was introduced into this country by seed collected by E. H. WILSON in Western Szechwan and may be distinguished from the other late-flowering Gentians by its habit and foliage. It is a stiffer, more compact grower; the leaves are ovate and blunt at the apex. The plant, with me, is not so free a grower as *G. Farreri* and *G. sino-ornata*, and is more difficult to get established. The flowers are smaller than those of *G. sino-ornata* and are a deep purple-blue.

It comes into flower in early September, but is not such a free

bloomer as the other late-flowering varieties. This species has not yet seeded with me, but as my plants now appear to be established and made good growth last year, I hope to get seed from them this summer.

There is another plant in cultivation named *G. Veitchiorum*, which is a much more robust grower and has leaves much longer and wider. This plant I have growing in my garden, and when it blooms this summer I shall be able to compare it with the true *G. Veitchiorum*.

Gentiana Lawrencei is another of the late-flowering Gentians from Central Asia. The flowers are not unlike those of *G. Farreri* but much smaller, being only $1\frac{3}{4}$ inches long, blue above, the tube being pale with dark-blue lines, standing solitary on the ends of the narrow-leaved stems. It is a more slender plant with narrow leaves, almost thread-like, and, with me, a much slower grower than *G. Farreri*, the flowers only opening in bright sunshine and a warm, dry atmosphere.

Gentiana Purdomii.—This Asiatic Gentian, named after the late Mr. PURDOM, makes close-lying rosettes of narrow, glossy leaves, from which radiate trailing, prostrate stems, each carrying about a dozen upturned flowers, violet-blue and freckled with tiny white spots. It grows and seeds well under the same conditions as other Asiatic Gentians. I consider it a first-rate garden plant and valuable for the rock garden.

Gentiana stragulata (fig. 36).—This species was named by the late Professor BALFOUR and Mr. G. FORREST. Professor SMITH, Edinburgh Botanic Garden, kindly gave me a plant of this species three years ago, and it has grown and flowered well during the last two years. This Gentian is a native of Yunnan, where it grows in moist, strong pastures. In habit it is not unlike *G. sikkimensis*, the leaves being glossy green and about the same size, but the flowers are very much more attractive. The flowers are on shoots 3 to 4 inches long, three to four flowers on a stem; they are tubular, $1\frac{1}{2}$ to 2 inches long by $\frac{1}{2}$ inch diameter, purple-blue outside. The five star-shaped lobes are light blue with a white line down the centre.

This is a rather rare species in this country and I find it grows well in my garden in a stony soil with full exposure to the sun, and flowers in early August. It is well worth growing, both for its habit and beautiful flowers, and is easily propagated by cuttings taken at the end of August, when they will be rooted by the following spring and ready to plant out.

Gentiana sikkimensis is a native of Sikkim, also found by G. FORREST in Yunnan growing on open, stony slopes. It is not such a showy species as some of the others, but it is a good grower with me, and comes into flower in July, after the spring-flowering Gentians are out of flower and before the autumn species open their flowers. It has stems 4 to 5 inches long with glossy, green, obovate leaves 1 inch long by $\frac{1}{2}$ inch wide. The flowers are in clusters at the end and sides of the shoots, there being ten to twelve flowers in each cluster. These are about 1 inch long by $\frac{1}{2}$ inch in diameter, having

five lobes, light blue with a white throat, the outside of the tube being light green. This *Gentian* produces a large quantity of seed. It can also be increased by cuttings, which, if taken in the autumn and potted up and kept in a cold frame, will have made good roots by the following spring and be ready to plant out.

Gentiana detonsa.—This rather attractive Himalaya species, a native of Western China, growing at 9,000 to 15,000 feet altitude, is unfortunately biennial or monocarpic and requires to be sown annually if a succession of flowering plants is to be kept up. It grows 15 to 24 inches high, is of a loose habit, producing flowers on long peduncles 3 to 8 inches long from the axils of the leaves. The flowers are four-lobed, fimbriate, 1 inch or more in diameter, dark blue in colour. I find this species very sensitive to atmospheric states; the flowers open in bright sunshine, but keep closed on a dull day. It sets seed very freely, and it germinates readily, but the seedlings should be planted in their permanent place as soon as possible, as they make few fine, long roots, which are easily broken. I think better results are obtained when the seed is sown where the plants are wanted to grow.

This species flowers in August and likes a moist, sunny position.

G. crinita and *G. serrata* are also biennials and of the same habit of growth.

Gentiana Froelichii is a native of the Eastern Alps, and I consider it one of the prettiest *Gentians* from that district. Although not often seen in gardens, it is well worth growing for its lovely pale blue flowers, which open in my garden about the end of July. It forms small clumps with three to four crowns with narrow, grooved leaves not unlike a plant of *Dianthus alpinus*. From this come up stems 2 to 3 inches high, carrying a single flower about 2 inches long with swollen tube and lobes erect and not opening out, of a pale blue colour, fading to yellow at the base. This species is growing in a moist, stony soil and it grows well after it is established, but does not like root disturbance. It can be increased by cuttings or seed but should be grown in pots until it has made good roots before planting out.

Gentiana pyrenaica, as its name indicates, is a native of the Pyrenees and has much the same habit as *G. verna*, but I find it a stronger grower than that species. It likes a moist, stony soil and flowers very freely. The leaves are bright shining green and it is a small plant, only growing about 2 inches high. The trumpet flowers, which open in June, are of a beautiful violet-purple colour. This species is a free seeder.

Gentiana lutea is a native of Europe and Asia Minor and is one of the strongest-growing species, attaining a height of 3 to 4 feet, with large leathery leaves of a light green colour. It flowers at the end of June and is more suitable for the border, its size tending to exclude it from the rock garden. The yellow flowers are freely produced in whorled clusters up the stem among the leaves. The roots of this species are used in medicine. It sets large quantities of seed, and plants raised from seed take three to four years to flower.

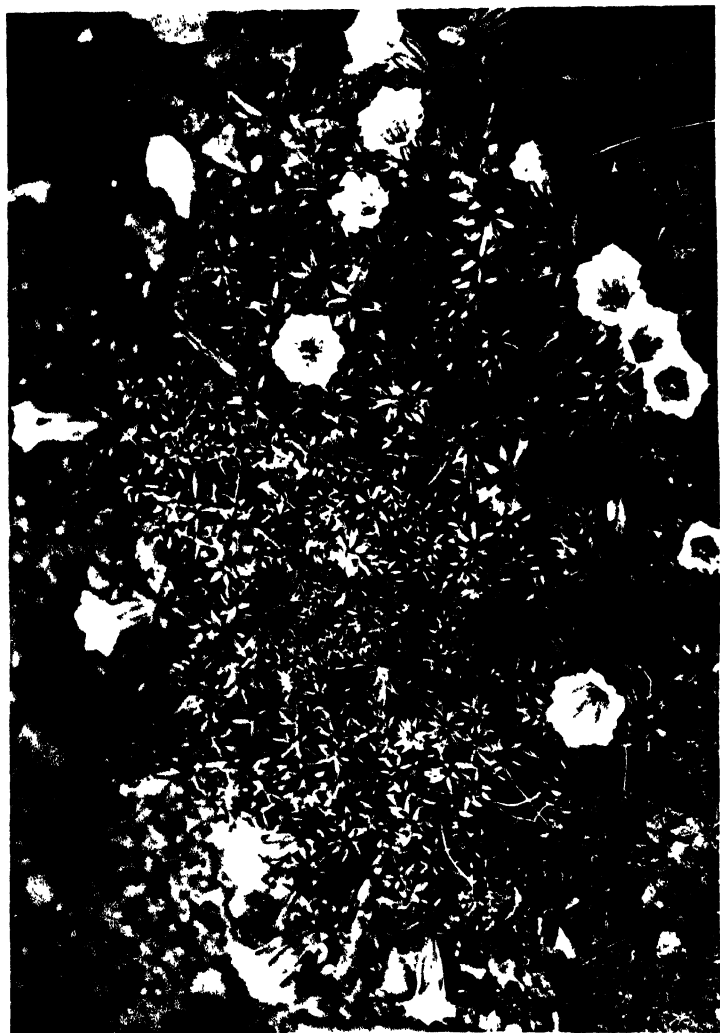


FIG. 35.—GENTIANA HEXAPHYLLA.

[To face p. 232.



FIG. 36.—GENTIANA STRAGULATA.

[To face p. 233.]

Gentiana pannonica is a European species growing about 2 feet high, with large corrugated leaves in pairs on the stems. The flowers, in whorls, are reddish-purple on stout stems with the lobes of the corolla almost reflexed. Among the Gentians this species is rather outstanding on account of the unusual colour of its flowers.

Gentiana Przewalskyi is a native of Tibet and in growth not unlike *G. Purdomii*. It has narrow pairs of dark green leaves with flowers on stems about 9 inches long, a violet-blue colour. It grows well in a sunny exposure and seeds freely, and should be propagated by seed.

Gentiana septemfida.—This is one of the easily grown species. It is a native of the Caucasus up to 9,000 feet and comes into flower in August. The stems are about 9 inches long with pairs of oval-pointed leaves bearing clusters of clear, soft blue flowers with the lobes of the corolla cut and jagged and fringed. This species sets a large quantity of seed which germinates freely and makes good flowering plants within three years. *G. Freyniana* and *G. Lagodechiana* are very similar to *G. septemfida*, and I believe are the only forms of that species. *G. Lagodechiana*, with me, is a more dwarf plant of prostrate habit, with flowers of a deeper blue.

All of these varieties grow and flower well in any good garden soil.

Gentiana Cruciala is a native of the Alps and N. Asia; it is a very easy and vigorous-growing Gentian in any sunny garden soil. It is one of the prettiest of the large-leaved species with dark blue flowers in clusters on stems about 9 inches long. It flowers in August and is a free seeder and easily raised from seed.

Gentiana acaulis.—This well-known species forms a dense carpet of compact tufts of glossy, green leaves from which rise large tubular deep blue flowers on stems about 4 to 5 inches long, and comes into flower in my garden in early June. It is, however, very uncertain as to flowering in cultivation. In some gardens it will flower freely without any trouble, but in others no amount of care will make it flower.

Some years ago I tried to grow and flower this species in my garden on the east coast of Scotland. It grew fairly well but refused to flower. It would be interesting to know if the sea air has anything to do with this refusal to flower. My garden at Kirkcaldy is on the other side of the Firth of Forth from the Edinburgh Botanic Garden, where they find the same difficulty in flowering this species.

I lifted the whole clump in early spring when growth had started, divided it into small rooted pieces, potted them up and kept them in a cold frame for about six weeks. I then planted them in my garden in Perthshire and the following year nearly every plant flowered, and has flowered profusely every year since. They were planted behind a stone edging to a shrubbery and now form a border about 18 inches wide and are a mass of bloom in early June. The plants are growing in the natural soil which is rather stony, which keeps it well drained, but has no limestone or gravel—which is usually

recommended—mixed with the soil, but the stone edging helps to keep the roots cool during the summer.

I find it required to be planted fairly deep and firm, and after a few years, if it does not flower freely, it should be lifted in spring or immediately after flowering, divided into small rooted pieces, and replanted in fresh soil as deeply as possible.

This Gentian seeds freely, but it is three to four years before the seedlings flower and is much more quickly propagated by division.

G. alpina is very like *G. acaulis* but with smaller leaves and flowers on much shorter stems.

Gentiana asclepiadea, known as the 'Willow Gentian,' is a tall-growing species reaching nearly 3 feet high and coming into flower in August. It is a native of the Alps and when grown from seed comes rather variable, the colour in some flowers being a better blue than others.

This species has dark, oval, pointed leaves in pairs, and from the upper part of the stem in the axils of the leaves the trumpet-shaped flowers stand out in clusters.

There is a white form which often appears among seedlings, which is rather pretty.

This species is not particular as to soil and will grow and flower in any cool garden soil. It is an extraordinary free seeder and I find seedlings coming up all over my garden where the soil has not been disturbed. The seed germinates like cress and makes good flowering plants in three seasons. It makes a pretty plant to naturalize in the wild garden, but should be raised from seed as it dislikes root disturbance.

Gentiana verna.—This species does best with me when grown on a sunny slope in well-drained, stony soil, but does not grow and flower as vigorously as some of the Asiatic species and does not seem to want as much moisture as these Gentians.

Collected plants have not done so well as those raised from seed; the latter make good flowering plants within three years of sowing the seed. This lovely Gentian forms compact tufts about 1½ inches high, from which flowers of azure blue spring on stems about 3 inches high.

This Gentian seeds freely and can be propagated by cuttings or seed. I find it is much benefited by a top dressing of loam and leaf soil after it has flowered and again in early spring.

G. bavarica grows fairly well in my garden in a very damp but well-drained soil. It flowers in August and after *G. verna* is over. The leaves are much smaller, yellow-green in colour, and look like a small sprig of Box. The flowers are of a velvety dark blue colour and very pretty.

The photographs illustrating this article were taken by me in my garden during the last few years. Some have already appeared in *The Garden*, *Country Life*, and *Gardeners' Chronicle*, and I am indebted to the editors of these journals for permission to reproduce them here.

HORTICULTURE IN THE TROPICS.

By W. HALES, A.L.S.

[Read November 1, 1927; MR. W. CUTHBERTSON, V.M.H., in the Chair.]

THE Trustees of the Chelsea Physic Garden very generously decided that I should be granted four months leave of absence to make a visit to the tropics, so that I could see tropical vegetation growing in its native home, and the countries chosen for this purpose were Ceylon, the Straits Settlements, Malay, and Java, as it was thought that these countries would give examples of very varied types of natural vegetation, and diversity of plantation crops.

I left London on December 3, in the P. & O. boat *Morea*, calling at Gibraltar, Marseilles, Port Said, and Aden, finally reaching Ceylon at the port of Colombo on December 26.

At these several ports opportunity was afforded for landing, and at Marseilles it was of interest to note that the plane trees which in London had been defoliated for several weeks, were still carrying their green leaves.

Fortunately we made the passage through the Suez Canal during the day and were thus able to get some idea of the Arabian and Egyptian deserts and their weird barrenness, relieved only by the beautifully kept control stations and the stretches of *Casuarina* trees planted along the banks of the canal to prevent sand blowing from the desert into the canal and silting it up. Occasional plantations of date palms are also seen where there is sufficient water available for them.

At Aden a visit was made to the ancient water tanks which are hewn out of the solid rock and provide the only fresh water available. The average annual rainfall for Aden is only $2\frac{1}{2}$ inches, so that these tanks are filled only about once in every six years, when they get a deluge of rain. Looked on from the sea Aden is a desolate, barren place, but it has an interesting scrub flora which has recently been described.

When I landed at Colombo I was met by an Indian friend who is the Assistant Professor of Botany in the University College there. I was taken over this college and found a most up-to-date establishment with excellent facilities for teaching and research.

Ceylon is noted for its tropical luxuriance, and one gets the first impressions of this in its capital of Colombo with its masses of green foliage and the variegated colours of numbers of flowering plants to be seen everywhere.

The Victoria Park is well worth a visit for the many interesting plants which it contains, among them, large Cinnamon trees, a giant

Eucalyptus albus with conspicuous white bark, the endemic *Terminalia Thwaitesii* with large buttress stems, *Casuarina equisetifolia* 70 feet or more high with switchlike branches, and hanging like a hugh curtain from the branches of the Wild Olive, the largest plant of *Vanilla planifolia* I saw during my travels. Clothing the stems of *Terminalia glabra* was the epiphytic *Pothos aureus*, reaching 30 feet in height, and a lovely plant it is seen in this way. Climbers such as Bignonias, Allamandas, Bougainvillaeas, and the beautiful *Antigonon leptopus* in its pink and white forms are used here, as elsewhere in Colombo, for their rich colour effects which in the tropical sunshine are very brilliant.

In many of the charming bungalow gardens about Colombo, *Spathoglottis aurea* and *S. plicata* are used for bedding much as we use Pelargoniums at home, and they give royal feasts of colour, as do *Vinca rosea* and its variety *alba*.

Owing to its different elevations Ceylon has varying temperatures and climate which make it possible to grow a wide range of crops. At Colombo the mean temperature for January is 79°, and for April 82½°, while at Newara Eliya at 6,188 feet elevation, where the thermometer sometimes falls below freezing point, the average temperature is 58°. In the large planting districts, Dimbula, Dikoya, Maskeliya, and Uva the average is 65° all the year round.

The rainfall varies from 37 inches at Hambantota to over 200 inches on the Adam's Peak range, while in Colombo it is 88 inches.

Ceylon has an area available for cultivation (excluding lakes and backwaters) of some 12,000,000 acres, and at the present time about 4 millions are under cultivation or used for pasturage, the areas devoted to the chief crops being, in acres: rice 610,000, other food grasses 120,000, coco nuts 750,000, areca, palmyra and kittul palms 140,000, tea 398,000, rubber 184,000, cinnamon 45,000, cardamoms 9,000, other spices 10,000, sugar 20,000, cacao 36,000, fruit-bearing trees 250,000, tobacco 25,000, essential oils 40,000, other cultivated grasses 15,000, vegetable and garden produce 350,000, natural pasturage 1,000,000 (about).

From Colombo a visit was made to Mount Lavinia, formerly the residence of the Governor, but now a health resort, surrounded by coco-nut groves. Several pretty Sinhalese villages are passed on the way, and one may gain some idea of the beauty of the country and its dignified inhabitants.

From Colombo I went to Kandy the mountain capital of Ceylon, from which the famous gardens of Peradeniya are four miles distant. By train the journey takes four hours and is most attractive owing to the constant change of scene from the low country to the mountain zone of the Central Province. For some distance the train runs through flat rice fields, which alternate with gentle knolls on which stand the residences of the native cultivators surrounded by groves of plantains, jak fruits, bending coco-nut palms, contrasting gracefully with the straight and slim areca nut palm and the elegant sugar palm,

while here and there an occasional glimpse is caught of the talipot palm, one of the most noble objects in the vegetable kingdom.

The sugar-loaf top of Adam's Peak soon comes into the view, rising to a height of 7,352 feet above sea level, being the fifth highest peak in Ceylon, and not long afterwards the double-headed Allagalla mountain also shows itself, and the real climb having now commenced a second engine is attached to the train, which, owing to the ascent being now 1 foot in 45 feet with curves round the mountain side of some 600 feet, proceeds at the slow rate of about 12 miles an hour. This, however, has its compensations, since you are able to note the exquisite mountain, valley, woodland, and homestead scenery, with the view into the famous Kandy Pass 1000 feet below. Conspicuous also in the Dekanda Valley are the terraced rice fields and the silvery foliage of the Kekuna tree—*Canarium zeylanicum*, while the purple flowers spikes of *Lagerstroemia indica* attract attention. On the hill-sides large rubber plantations are interspersed with delightful natural scenery down which waterfalls tumble and glisten in the bright sunshine, and give a refreshing cooling effect.

Finally, after crossing a bridge which spans the Mahaweli-ganga, New Peradeniya station is reached, and leaving the train you are in a short time within the Royal Botanic Gardens, Peradeniya. These famous gardens were opened in 1821—six years after the fall of the Kandyana kingdom—and are part of land which belonged to a royal demesne. They are 146 acres in extent, are ideally situated on undulating ground in a loop of the Mahaweli-ganga, with the shadow of the Hantane mountain rising 4,100 feet in the near distance, and have much natural beauty, added to by the excellent landscape work of its several distinguished directors—THWAITES, TRIMEN, WILLIS, now being continued under the Hon. F. A. STOCKDALE.

Part of the early work of Peradeniya was concerned with collecting and describing the native flora which is now contained in the excellent herbarium and museums within the garden, and in the publication of a "Flora of Ceylon" dealing with the flowering plants in 1900.

Simultaneously with this work the garden occupied itself with the introduction and acclimatization of the useful and ornamental plants of other countries. In this way cinchona, cacao, rubber, coffee, and vanilla were introduced as plantation crops, and the extension of the cultivation of tea, cloves and nutmegs was much helped.

Fine old examples of these early introduced economic plants are still to be seen in the first Para rubber tree planted in Ceylon; a giant brazil nut tree; specimens of the nutmeg, now 100 years old and still bearing fruits; cinnamon, allspice, cloves, and cassia bark, all represented by large examples.

Near by is a younger plantation of economic plants of various kinds which includes *Terakogenos Kurzii*, the oil from which is now used in the East for curing leprosy. It was of interest to note the rapid growth this collection had made in the short time since it was planted.

The main entrance to the gardens on the Colombo-Kandy road is

conspicuous for the magnificent row of *Amherstia nobilis* to the right, and the large oil palms just within the gates. The piers of the gates are covered by *Bignonia*.

Arranged in sections, which are lettered and planted systematically, it is easy to find any group of plants the visitor may be interested in. The palm collection as one would expect is very extensive and contains a good example of the interesting double coco-nut—*Lodoicea sechellarum*, and the sealing-wax palm *Cyrtostachys Renda* attracts attention by the brilliant colouring of its sheathing leaf-bases. Crowning an eminence was a very fine flowering Talipot palm (*Corypha umbraculifera*), and not far away by the lakeside the giant bamboo *Dendrocalamus giganteus* was raising its culms 120 feet high, being closely followed by *Gigantochloa aspera* which reached 80 feet to 100 feet high, both a contrast to the Japanese *Bambusa nana* which only grows a few feet and is largely used here and elsewhere in the tropics as a hedge plant.

In the lake itself the sacred Lotus lily (*Nelumbium speciosum*) has become a pest, and has to be kept within bounds so as not to kill out the many other smaller water things planted near the margins.

The herbaceous garden is planted much on the same lines as in our own botanic gardens—the most convenient from the student's point of view. It contains a wealth of beautiful flowering dwarf plants which would be lost among the taller growing things in the other collections.

Peradeniya has a good collection of the more interesting conifers, one of which, *Araucaria Cookii*, grows to a height of 120 feet; *A. Bidwillii* also reaches a great height, so does the Moreton Bay pine *A. Cunninghamii*. Among the Cupressus, were *C. macrocarpa*, *C. funebris*, and *C. Knightiana*. *Agathis robusta* also makes giant trees here; so does the Malayan *Podocarpus cupressina*; and *Gnetum Gnemon* flowers and fruits.

Among other interesting trees I noted *Michelia Championi*, the flowers of which are used for decorating ladies' hair, and also as a Buddhist temple flower; *Magnolia grandiflora*, 50 feet high; *Cananga odorata* which gives a perfume—much used by the Chinese; *Berria Ammonilla* from which is obtained the Trincomale wood much sought after by cabinet makers for its beautiful markings; *Diospyros Candolleana* with wood taking a brown polish and black spots; *Mallotus philippinensis* with weird corrugated stems and a good timber tree; *Tachardia lacca*, the source of the beautiful Ceylon lacquer work; *Pterocarpus Santalum*, the santal wood; and a big Mango 150 feet high. *Bassia longifolia*, a native tree of Ceylon yielding oil much used by the natives for rheumatism, was just opening its soft pink buds. *Wormia Burbidgei* 20 feet high was covered with its yellow flowers, and so were several species of *Brownea* with their brilliant scarlet panicles.

Several climbing plants not common in our gardens were seen in perfection: notably *Congea tomentosa* with long loose sprays of mauve-pink velvety bracts; the tropical American *Petrea volubilis*

with mauve and pink racemes; *Odontadenia speciosa* from South America; *Camoensis maxima* from tropical Africa with large white scented flowers, *Ipomoea*, *Porana*, *Roupelia*, *Thunbergia*, *Wagala*, and many others. Indeed, a special feature is made here of climbing plants noted for their beautiful flowers and bracts. The collection of Bougainvilleas contains some very beautiful examples of the latter.

The section of the Garden devoted to fruit-bearing trees contains Mango, Sapodilla, Rambuttan, Loquat, Java Almond, Litchi, Anchovy Pear, Grape Fruit, Mangosteens, and many others.

One of the most showy of the larger trees in flower was the scarlet-flowered *Spathodea campanulata* of tropical West Africa, and possibly the most interesting a plant 35 feet high of the Brazilian composite *Stiftia chrysantha*. One might go on describing the wealth of interesting trees and plants to be found in Peradeniya, but this would occupy the whole of my time.

Reference must, however, be made to the work of the Agricultural Department under which the garden comes. This work is now largely concerned in developing and improving existing industries. To this end, during recent years, well-equipped laboratories have been built and a staff of scientific workers appointed to deal with diseases of plants, and to help in solving the many problems which crop up in field and plantation. An experimental station has also been added for the study of methods of cultivation and the preparation of products for the market upon a commercial scale. This station, which is just across the river from the garden, is about 650 acres in extent and has an annual rainfall of 90 inches. At the present time, such crops as tea, coco-nuts, areca-nuts, citronella, oranges, limes, crotons for their oil, pepper, annatto, various fodders, and trees likely to be of use for timber are among the subjects being dealt with. In connexion with this station there are other stations at Heneratgoda lower down (18 miles from Colombo) and Hakgala at 4,100 feet elevation.

Near the garden is the private estate of the New Peradeniya Tea Company, over which it was my good fortune to be taken by the manager. In 1923 this estate produced 1,000,000 lbs. of tea, about 6 % of the total production of the island. In 1926, however, owing to the dry spell of weather which had been experienced, the estimated yield was only about 400,000 lbs. The tea-plant lasts for about 40 years. Every fourth year it is cut down to the ground to encourage new growth and do away with the woody stems so much liked by the stem-boring weevil which does so much harm, and in this way is kept under control.

The chief shade tree used here among the tea was a species of *Erythrina* which, being a leguminous plant, is useful for the nitrogen fixing bacteria on its roots. Being a small tree it is easily pruned and the prunings are dug in as a green manure.

In the factory I was shown the whole process of manufacture of tea from the green leaf to the packing in boxes for export (the wood for

the boxes comes from Japan). Rubber is grown on this estate in some quantity, but is gradually being cut out and replaced by tea, which is considered to be a much more stable crop for the district.

Cacao was also another of the plantation crops on this estate, and pepper clothed the stems of *Pithecolobium Saman*, which is used all along the main roads of the estate for a shelter tree.

Here and there one saw a few coffee plants—relics from the period when coffee was one of the chief crops, before disease and over-production all over the world rendered it unprofitable.

Leaving Peradeniya, I took the train for Nuwara Eilya, which is 6,200 feet above sea level and which, as I mentioned before, has an average temperature of 58°, and an occasional frost.

The train journey is one of great interest and beauty, as the line runs through a large planting district and mile after mile of tea gardens occupies the mountain sides. Many of the railway stations are themselves pictures of floral art; one of these had a fence clothed with the "Morning Glory" (*Ipomoea rubro-coerulea*) covered with its delicate blue flowers. Bougainvillaeas and Allamandas are also much used for this purpose, while at Watagoda, *Datura suaveolens* had escaped for some distance on either side the station and had its white chalice suspended in profusion from its branches—an ever to be remembered sight. Lantanas were very common everywhere.

I was intrigued to see the Cuban hemp (*Furcraea gigantea*) apparently wild all along the line for several miles. This I later discovered was planted some years ago by a Fibre Company who obtained a concession from the Government to use the land for a certain distance on either side the line for growing this fibre-producing plant.

At the junction Nan Oya, where the line is continued to Nuwara Eilya by a toy train, I was met by a friend's car and did the last part of the journey through the pass, which is very beautiful. Here and there, standing like sentinels, was the giant *Lobelia nicotianifolia*, the beautiful native tree fern *Alsophila crinita* and the lesser *Hemitelia Walkerae*, while now and then one saw large colonies of the Ceylon daffodil (*Ipsaea speciosa*), interspersed with *Exacum zeylanicum*. Large plants of *Rhododendron arboreum* were common, and so was *Melastoma malabathricum*, but the latter is an escape, like the South African *Aristea Ecklonis*, which is becoming a pest.

Nuwara Eilya stands in an amphitheatre of hills and is largely used as a health station. The Governor and the chief secretary have residences here, attached to which are very interesting gardens in which are grown many annuals common to English gardens, such as sweet peas, antirrhinums, etc. Carnations also do very well, and the pretty *Dierama pulcherrimum* was almost a weed, but is very valuable for its cut flowers, which travel well. The gardens have a special interest for the large number of fresh vegetables, which are grown in them to be sent down to Colombo, peas, beet, carrots, leeks, cauliflowers and artichokes being the chief kinds which succeed.

There is also a large public park in which many good things are to be found. Several kinds of roses flourish, and some of the Australian Acacias and Eucalyptus make large trees. In fact, on the hills about Nuwara Eilya *Acacia melanoxylon* is one of the chief trees planted because of its great value for firewood, the chief trouble with it being to keep it clear of the semi-parasitic mistletoes which appear to be partial to it.

In the park is a very fine avenue of *Cupressus macrocarpa* which gives welcome shade on bright days, and all about on the hills are huge specimens, 30 to 40 feet high, of *Rhododendron arboreum*.

There is also a private tea research station here under the direction of our old friend Dr. PETCH, who kindly took me over it.

My next stage took me to Hakgala Gardens, six miles south-east of Nuwara Eilya on the Bandulla road, 4,100 feet above sea level. These were started in connexion with Peradeniya in 1861 as a hill station for growing Cinchona, and many of the older plantings are from seedlings raised here and afterwards distributed to the planters.

In 1882 Mr. WILLIAM NOCK was appointed superintendent, and he began to lay out part of the estate as a botanic garden, and largely increased the cultivation of other useful and beautiful plants of which Hakgala bears witness to-day. The present area under cultivation is 55 acres out of 500 acres which are available for development.

The garden faces due east and has an imposing background, the Hakgala rock, whose highest peak rises 1,400 feet above the garden. This rock is clothed with *Rhododendron arboreum* in two colour forms. Much experimental work is being carried out at Hakgala in the acclimatization of exotic trees which are likely to be of value as timber trees, and many of the Australian Acacias and Eucalyptus are already showing their suitability for this purpose. Others are being tried for their economic products, such as the bark for tannin, etc. A large section is also devoted to grasses and other fodder plants with a view to their suitability for feeding purposes on the barren patnos.

From this point on a clear day, a view of 40 miles can be obtained over magnificent mountain scenery upon which the limits of cultivation are clearly discerned. Some years ago the Government passed a law that all land above 5,000 feet should be reserved for the native fauna and flora. It is true that there are areas of cultivation above this elevation, but they are those which had been sold previous to the passing of the Act, and are chiefly under tea, which is used to increase the flavour of the tea produced at the lower elevations.

Mention must be made of the very interesting collection of native plants which have been collected by Mr. Nock and planted in a special section of the garden. Among them I noted *Ipsaea speciosa*, *Viola serpens*, *Exacum macranthum*, *Impatiens Hookeri* with handsome white flowers veined with red, *Lobelia excelsa*, *Spilanthes Acmella*, *Arisaema Leschenaultii*, *Satyrium nepalense*, *Phaius Wallichii*, *Eria bicolor*, *Calanthe veratrifolia*, and the pretty little skullcap *Scutellaria oblonga*. On the trees were *Dendrobium nutans* and the

sweet-scented *D. heterocarpum*. *Lycopodium squarrosum* and *L. serratum* were also plentiful. Nowhere have I seen so good a collection of the forms of *Begonia Rex* as at Hakgala, where they revel in the moist conditions. The fernery is also a special feature; and besides many noble specimens of *Alsophila crinita* and *A. glabra* the native tree ferns, there are good examples of the Australian *Alsophila Cooperi* and *Dicksonia antarctica*, and the New Zealand *Cyathea dealbata*.

Fuchsia arborea, which is known as the Ceylon lilac, and the Peruvian *Fuchsia F. corymbosa* (two plants which years ago used to be seen in our greenhouses, but now alas rarely met with) were seen in large bushes. *Brunfelsia uniflora* also made a very showy border plant, as did *Salvia leucantha* and *S. farinosa* which was represented in two forms, one of which had deep violet flowers.

Many annuals are grown at Hakgala for decorative purposes, but owing to the ravages of surface caterpillars they have to be protected in the young stage with paper collars placed around each seedling.

Among economic plants are good trees of *Syncarpia glomulifera*, the New South Wales turpentine tree, also useful as a timber tree; *Pinus longifolia*, which gives a good resin, and the bark used for its tannin, and for fuel in smelting iron; *Juniperus bermudiana*, the pencil cedar; *Eucalyptus Globulus*, from which oil is distilled from its fresh leaves; *Tristania conferta*, a good shipbuilding wood; a very large specimen of *Cinnamomum Camphora*, from which camphor is distilled from leaves, twigs and roots; *C. Cassia* of South China and Burma, the source of the "Cassia buds" of commerce used as a spice in confectionery; the Black Guava (*Psidium Cattleianum*), the fruits of which are here produced twice in a year and used for jelly making; *Sapindus saponarius*, the seed vessels of which are used as soap and the seeds as buttons; *Citrus buxifolius*, the marmalade orange, which annually gives good crops of fruit; and the mountain Papaw, *Carica candamarcensis*, the fruits of which are used for stewing, but are not used as dessert like those of *C. Papaya*.

Several hours were spent in the jungle which adjoins the garden, where numbers of small filmy ferns and mosses clothe the small undergrowth, and many epiphytic orchids (*Eria*, *Dendrobium*, *Coelogyne*) abound; whilst making a natural carpet was *Selaginella brachystachys*. *Strobilanthes gossypius* was one of the common plants of this jungle.

From Colombo I took the boat to Penang, a very beautiful island on the west coast of the Malay peninsula. The island is a mass of hills and valleys, the highest point being Western Hill with an elevation of 2,755 feet. Its greatest length is 15 miles, its greatest width 9 miles. It contains 107 square miles and it is very difficult to conceive any more beautiful spot than Penang with its magnificent views across to the mainland of the Malay, and its interesting coast road, along which good use has been made of the lovely *Eugenia nobilis* as a wayside tree. Betel nut palms are also common, and I believe give the name to Penang. Coconut palms are grown as plantation crops and other large areas are devoted to various fruits.

At the top of Penang Hill at 2,600 feet, which is reached by a funicular railway, the Governor has a charming bungalow, surrounded by a small but interesting garden in which *Dacrydium elatum* and *Podocarpus nerifolius* were well represented, and many flowers common in English gardens were grown. The pigeon orchid (*Dendrobium crumenatum*) was very common on most of the trees.

I spent the whole of one morning in the jungle which adjoins the bungalow, under the guidance of one of the staff from the Penang Gardens. This jungle is the home of the rare *Nepenthes albo-marginata* and many other good things. The rare fern *Diplazis conjugata* grew 6 feet high, and several *Gleichenias* had fronds 12 feet or more in length. Near the pool was *Cypripedium barbatum* in full flower, and Gesnerads and Melastomaceous plants were common. In fact, the whole morning was full of surprises in meeting old friends and making acquaintance with fresh ones—so rich is the flora hereabouts.

Most horticulturists know of the Penang Waterfall gardens, which were made famous by Mr. CURTIS who did so much in developing their beauty. Surrounded by pure jungle they have a natural setting, which has been taken every advantage of, and they contain a wealth of very interesting and rare plants. One, *Nepenthes ampullaria*, was the finest example of this interesting species I have ever seen, and had an unusually large number of pitchers at its base. *Platycerium grande* was also very fine on one of the trees. Good examples of economic plants are to be seen here; and the greenhouses contain excellent collections of the more showy foliage plants and ferns, all in good health and reflecting much credit on those responsible for their upkeep.

Unfortunately monkeys abound in the jungle and cause much damage to some of the trees by breaking out the young terminal shoots. A fine specimen of *Albizia moluccana* was noted as being quite destroyed through their attentions.

The European quarters of Penang are very beautiful with their tree-lined streets and the gay gardens which surround the bungalows, and one could not help but feel that in spite of the heat, life in the tropics has much to make it enjoyable.

I crossed from Penang by the steam-launch which runs to Prai on the mainland of the Malay, and took train for Taiping, where I was met by a friend who had mapped out an excellent programme for my stay here, and we first made a tour of the Mangrove swamps under the charge of one of the Government Forestry Officers.

Motoring to Port Weld we took steamer to Trusan Tima, where we got into a sampan and were taken to see a two-year-old regeneration of *Rhizophora conjugata*, *Bruguiera parviflora*, *Sonneratia alba* and a species of *Avicennae*. This regeneration was being checked by the rapid growth of a fern (*Acrostichum aureum*) which occurs in two forms, one of which grows over 6 feet in height.

There are over 200,000 acres of mangrove swamp on the Malay coast, from which the Government obtain a revenue of 580,000 dollars a year from the sale of the timber, which is chiefly used as firewood,

and this huge area is dealt with by the Forestry Department on strictly scientific principles of Forestry, and definite records kept of growth, sales, etc., so that anything like the growth of this fern and the cost of clearing it is accounted for.

In the evening we anchored the launch under the fishing village of Pasir Hitam and spent a most delightful night sleeping on the deck of our launch. Early next morning we rowed ashore and passed through the fishing village to see a mangrove formation of *Rhizophora conjugata*, *Calophyllum Inophyllum*, and two species of *Avicennae* which had been formed naturally during the past 21 years. Returning through the village to our sampan we were rowed up river to see another area composed of Lenggadai which was mature and ready for felling. Later we were taken to see a large area some distance away which had suddenly died through no apparent reason, but it was suggested that the mud had become silted up by the tides and thus prevented aëration. The journey to this area required some skill in walking on the poles which had been felled to make a path, and several times we made a false step and were precipitated into mud up to our middles and had to help each other out. After seeing this we returned to our sampan in the canal and were taken to an area where felling operations were proceeding. This is very cleverly done by the Chinese coolies; who bring down 5 or 6 trees at once.

The felling is all done by Chinese contractors, who have to dig the canals for the barges to pass along carrying the wood to Port Weld, and they also have to make the compounds in which the coolies live. We went over one of these compounds and found it very interesting. Finally we returned to the open sea and were taken back to Port Weld, where no less than 15 miles of cut timber was in stack ready for use.

The next day we made the ascent of Taiping Hill to see the hill flora and health station. This hill station is at 3,600 feet elevation, and the eight miles of mountain pathway up to it is full of interest owing to its rich flora and the views which are to be obtained over the Larut Valley in which Taiping lies.

Gleichenias abound at the lower elevations, and no fewer than four species of *Nepenthes* were noted as we went up. In the recesses of the rocks huge *Angiopteris* and *Alsophilas* were common, whilst large areas of filmy ferns clothed the faces of the rocks on either side the pathway.

The "Gardens Bulletin" of the Straits Settlements for March 1925 gives a list of the flowering plants of Taiping Hill, and this is worth perusal if only to note the large numbers of endemic plants which are to be found here. Included among these are species of *Sonerilla*, *Chirita*, *Didymocarpus*, *Anoectochilus*, *Arisaema*, *Aeschynanthus*, and *Medinilla*, which will give some idea of the wealth of the flora. Incidentally I may say that many of the *Medinillas* are semi-epiphytic, which may account for our not having more of these beautiful things in cultivation.

The vegetable garden at this hill station is very extensive, formed

on the terraced hillsides filled with vegetables of many kinds. The varieties grown are those which have proved to be most amenable to cultivation under the conditions of heat and moisture, but new varieties are being constantly tried.

The bungalows, at one of which we stayed for the night, are very roomy and among delightful scenery, and are themselves surrounded by small, well-kept gardens in which such things as roses, violets, sweet peas, and *Dahlia glabrata* were very showy; and after a short stay at these hill stations those who live in the tropics are re-invigorated for their work on the plains below.

Taiping is said to get its name from a Chinese word meaning everlasting peace, and it is certainly a town of much beauty. It lies on the Larut alluvial mining field. Large areas in this valley are considered to be exhausted of their tin and have now been converted into pleasure gardens with large ornamental lakes, and plantings of trees and shrubs and beds of flowering plants. Round the large lake is a wide drive shaded with the "Rain Tree" (*Pithecolobium Saman*), which spreads out its branches almost horizontally from the main trunk. These lateral branches are veritable conservatories in themselves, as this tree appears to favour the growth of epiphytic plants of all sorts, and especially ferns and orchids which hang from, or sit upon, its branches, huge examples of the bird's-nest fern (*Neopteris Nidus-avis*) 4 to 5 feet across being common. The tree itself bears golden yellow flowers, deeper in colour than those of the laburnum, with a delicate scent. The rainfall at Taiping is heavier than elsewhere in the Malay States—400 inches a year, and this, coupled with the heat, makes vegetation very riotous and Taiping a botanist's paradise.

A car ride of 23 miles took us to Kuala Kangsar, along the main road to Kuala Lumpur. Skirting this road are many Malay compounds and some of the oldest rubber plantations in the Malay, and conspicuous is the giant rock, Gunong Pondok, which rises 2,000 feet, dwarfing everything else. This rock is limestone, and like all such formations contains large caves. The caves are occupied by bats, which cover the floors with excrement; this is collected and taken on the backs of bullocks to the hill station vegetable gardens and used as manure. Several large Durian trees in fruit were passed on the way, filling the air with their aroma.

Kuala Kangsar has a palace, the home of the Sultan of Perak. Near the palace is a research station of the Agricultural Department, in which many kinds of Pomellos and various other crops are being tried. The river Perak passes through the lower ground near the station, and at the time of my visit evidence was visible of the recent floods, when this river rose 70 feet in three hours and devastated rice and other crops. In fact so great was the destruction that it would hardly be possible to gather sufficient seeds of pedigree rice for future sowing.

From Kuala Kangsar I took the train to Kuala Lumpur which, since the Federation of the Malay States in 1896, has been developed

into the central seat of Government, and now contains some very fine buildings among delightful surroundings. The town is divided into two parts by the Klang River ; on the rising ground of the west side are to be found the bungalows of the Europeans, and on the east side live the Asiatics, who prefer to be herded together on the flat ground.

The public gardens and lake which are a special feature of Kuala Lumpur are already very beautiful, but under the skilful management of Mr. BUNTING are being developed into a rich collection of plants of all sorts. One very striking bed in these gardens was filled with the violet *Thunbergia laurifolia*, mixed with yellow Allamandas ; another had the scarlet bracted *Mussaenda erythrophylla*. Cleomes are also much used, and magnificent beds were seen of Ixoras and Cannas. The greenhouses had the best grown orchids I saw in the East.

Outside this garden, which is jungle land, clearings have been made and the native jungle trees labelled by Dr. FOXWORTHY, the head of the Forestry Department, and in this way visitors are able to get acquainted with the native trees. The garden itself is over 300 acres in extent, and adjoins the research station where large numbers of beds are devoted to seedling economic plants, and various areas are under trial crops of citronella grasses, oil palms, camphor, etc.

At the top of the hill is the building set apart for the Secretary of State for Agriculture. I went over this building, and it was an education to note the progress made in so few years in the development of science as an aid to the work in field and plantation. In this building are departments with respective heads and staffs for dealing with economic botany, plant pathology, entomology, chemistry, mycology, etc. Anyone interested can learn of the work carried on here through the medium of the *Malay Agricultural Journal*, which is published monthly, and contains articles on the subjects dealt with through this most progressive department.

Besides the experimental grounds already mentioned, other land has been acquired at Serdang, about 12 miles out on the Sungei Besi road. This estate six years ago was pure jungle, but at the time of my visit 700 acres had already been cleared and were under cultivation with crops which are being tried as likely to be of use to the planters in the Malay. It is a question whether too much of the already opened up country in the Malay is under rubber, and it is as well to take the long view that for several reasons rubber may not be so profitable a plantation crop in the future as it has been in the past. One of these reasons may, as with coffee in the past, be over-production of the world's needs. Hence one sees the necessity of being prepared with other crops suitable for the climate, upon which the planter may rely to give an economic return.

Of the things now being tried at Serdang there are : Food crops 19, fruits 18, beverages (tea, coffee, cocoa) 3, fixed oils and fats 11, essential oils 10, fibre plants 19, drugs 9, spices 5, dye stuffs and tannin plants 4, fodder grasses 18, fodder crops 3, cover crops 27, shade trees

8, miscellaneous crops 10 (these include ginger, areca nut, tuba root, West Indian gum, tobacco and gutta-percha).

Much good work has been done to increase the yield of fruits from the oil palm by hand pollination, an increase of 400 per cent. having been obtained by this means. (See *Malay Agr. Jour.*, Dec. 1926.)

Large areas are under the plants from which Chaulmoogra oil is obtained, which is now largely used for curing leprosy, these being *Teraktogenos Kurzii*, *Hydrocarpus anthelmintica*, *Hydrocarpus Wightiana*.

Catch crops such as bananas, coffee, *Calopogonium mucunoides* are grown among the permanent plantings.

Serdang impressed me very much by the carefulness with which all the research work was carried out, and the rapid growth made by the crops since planting.

Klang Gate (so called because the river Klang has forced its way through the mountain range), seven miles out from Kuala Lumpur on the Pahang road, was next visited. Here we made the ascent to 1,400 feet to a 3-mile long quartose dyke, where one gets a distinct Xerophytic type of vegetation and where *Baeckia virgata*, *Rhodoleia tomentosa*, *Rhododendron Teysmanii*, *R. longiflorum*, and the endemic *Eulalia Milsumi* are to be seen.

Lower down is a typical rock flora on which were the dainty *Didymocarpus primulinus*, *Ficus diversifolia* in two forms, *Cibotum Barometz*, and the interesting *Fagraea auriculata*. This last plant starts its life as an epiphyte, then kills its host plant and continues on its own.

The next day, with two friends, a journey was made by car to Fraser's Hill, 90 miles away from Kuala Lumpur on the Kula-Kuba, Kuala-Lipis main trunk road, and at the former town many of the houses were quite buried in the recent floods, and the road had been diverted. Fraser's Hill has an elevation of 4,500 feet and stands just above the "gap" in the mountains on the borders of Selangor and Pahang. It is reached by a good motoring road and is being developed about 4,000 feet as a hill station residential place, and already many bungalows have been built there.

In an interesting article on Fraser's Hill in the "Gardens Bulletin" of the Straits Settlements for August 1923, BURKILL gives good reasons for believing that this area was never covered with ice in the Glacial period. Hence it is one of special interest to the botanist, because of the very ancient type of vegetation which is still to be found on this range, among which are many ferns such as *Lindsyas*, *Dipteris conjugata*, *Gleichenias*, *Cibotum Barometz*, *Hymenophyllums*, *Alsophilas*, *Oleandra*, etc. *Lycopodium cernuum* and *L. phlegmaria* were plentiful, and a common carpeting plant was *Selaginella atroviridis*.

Nepenthes sanguinea was interesting since it was seen in all sorts of diverse places: epiphytic in masses on the branches of trees, growing among the moss in the jungle path, and clinging to the bare faces of the laterite walls. Seedlings were plentiful on these sheer walls.

In the jungle paths, growing in damp moss, was also seen the clear yellow *Impatiens oneidioides* which so far is not in cultivation, and the rare *Cypripedium Lowii* was also noted. *Spathoglottis plicata* and *aurea* were also common. Other orchids were *Bulbophyllums*, *Coelogyne*s, *Saccolabium*s, *Erias*, and *Dendrobium*s.

The parasitic *Loranthus coccineus* was also finely in flower, and the beautiful *Vitis elegans* showed its marbled foliage in many places. *Didymocarpus* and *Sonerilla*s in variety were carpeting the sides of the jungle paths much as primroses do in our own woods, whilst as an epiphyte on the tree trunks hung the lovely *Medinilla venusta* and *Æschynanthus Lobbianus* and *Æ. longicalyx*. Anyone interested in the plants of this range should consult the list mentioned in the "Gardens Bulletin" of the Straits Settlements for August 1923.

On the return from Fraser's Hill to Kuala Lumpur, two days were spent with Dr. FOXWORTHY, visits being made to the forestry museum and school in Kuala Lumpur and to some of the forest reserves.

Kepong (2,000 acres) was the first reserve visited, 16 miles from Kuala Lumpur, where a school for training officers was being built, and large numbers of nursery beds were filled with seedlings of native and exotic trees for planting in other places. Careful germination and growth records are kept of everything sown.

Seven miles further on is the Surgei Buloh reserve, which had been cut over, and we were shown the methods adopted for regeneration of the area (Bertram palm has to be cleared or it would choke regeneration). In the clearings many beautiful flowering plants were seen, *Tacca cristata* being very common, and also *Randia macrophylla*.

The second day a visit was made to the Kauching reserve which they are endeavouring to make into a pure forest of the Bornean *Camphora* (*Dryobalanops ovalifolia*).

This forest, of 11,000 acres, contains magnificent trees, some of which reach a height of 200 feet with a diameter of 11 feet. From carefully kept statistics it is claimed that land of this type when under forestry gives a better financial return than if it was cleared and planted with rubber trees. Moreover, many of the native plants are thus ensured a home. In this forest large numbers of beautiful things were seen that are grown in our stoves at home, and also some that so far have not been introduced.

Proceeding by train to Singapore, one passes through mile after mile of rubber plantations interspersed with tin mines.

The story of the introduction of rubber into the Malay has often been told, but will, I think, bear brief repetition. In the early days of planting in the Malay, coffee was one of the chief crops grown. This, after paying well for some years, was overproduced, and ruin threatened the planter. Kew received seed of the rubber tree through Sir HENRY WICKHAM from Para in South America, and from these seeds plants were raised which were sent to several places. In 1877 twenty-two plants reached the Singapore garden and were planted by THURTON who was then in charge, some in the garden, some at Kuala

Kangsar, others at Teluk Anson. It was found that the Malay climate suited this newcomer and by 1881 seeds were being distributed from Singapore. Companies were formed with British capital and planting became very rapid, and after the early tapping difficulties had been overcome the planter soon found that rubber would be a very profitable crop. The coffee was grubbed up, rubber taking its place, and coco-nut planting almost given up, whilst nearly all the new jungle clearings were planted with rubber.

This of course was all very well for a time, but in 1921 it was realized that the large production of rubber throughout the world was greater than its consumption, and the planter again appeared to be in for a serious time. As you know, this has been partially met by the Government's restriction of production. This restriction has kept the price of rubber at a profitable figure for production, and I may say incidentally has rehabilitated the trees in many plantations which, through over-tapping, were getting into a bad condition owing to rubber-bark disease.

Research has also been stimulated toward increasing the yield of rubber from a tree and thus decreasing the cost of production. It was found that some trees gave a higher yield than others, and these high yielders have been used as "mother trees" from which grafts are taken and worked upon other trees whose yield is not so high, and in this way a plantation is obtained of high yielding trees which give a bigger return for the same cost of tapping.

The problem of yield is also being attacked through genetical methods; this of course will be slower, but great hopes are entertained of success along this line of work.

The question may possibly be asked, Why don't they gather and sow the seeds from these high yielding trees instead of going to the trouble of bud-grafting? The answer to that is, rubber is a wind pollinated tree; and not until a large plantation is obtained entirely composed of high yielding trees, which are isolated from other plantations, can you expect to get a good percentage of high yielding trees, owing to the chances of cross-pollination.

On one estate in East Java, 1,400,000 lb. of rubber was being produced annually, and much research work was being done. In one 14-acre plot yield records of each tree had been kept for 5 years, and one tree was giving a very high yield—400 per cent. more than the average plantation yield—and from this high yielding tree buds had been used for grafting other high yielders, and plantations made from which tapping would commence next year. The nursery for this work was 70 acres in extent, and the manager informed me that from the sales of grafts alone to other estates it was paying for itself.

Other plots on this estate were under trial for testing the value of "cover crops" to the rubber, and it was evident from these trials that cover crops play a vital part in the health and growth of the rubber tree. The cover crops giving the best results were *Colopogonium mucunoides*, *Mimosa invisa*, and two species of *Vigna*, all of

which are leguminous plants which fix nitrogen in nodules upon their roots through the aid of bacteria. This nitrogen then becomes available for the rubber, and the plants are dug in also as green manure.

These cover crops also serve another important function, especially on sloping land, by protecting the roots of the rubber from becoming bared by the washing away of the surface soils during heavy rains.

Before leaving this estate, I was taken over the up-to-date factory and shown the latex, as it is collected from the trees, going through the various processes in its conversion to sheet or crepe rubber, in which form it is sent to the market.

Singapore, as you all know, is an island at the east end of the Malay on which was founded a British colony by Sir STAMFORD RAFFLES in 1819. It is 27 miles long and has a minimum width of 14 miles, and as a port has an immense shipping trade.

The Singapore Botanic Garden, which was my chief interest, has for several reasons a world-wide reputation. Possibly no garden out East has sent so many good plants to England as has this, and the excellent scientific work of H. N. RIDLEY, who was the Director from 1888 to 1912, placed it in the front rank as a scientific institution through his untiring energy as a collector and skill as a botanist. During RIDLEY's directorship an excellent herbarium was collected, and numerous publications issued on plants which he studied under cultivation and in the field. Moreover, a good deal of the planting which has made the Singapore Garden the beauty spot it is to-day was carried out under his direction.

The palm valley is very beautiful and rich in species, and one noted a large plant of *Calamus scorpioides* which is used for making the Malacca canes. This plant was growing over a large *Ficus*. Great clumps of the sago palm were also doing well, as were *Derris elliptica* and *D. malaccensis* which give the "tuba root" now being much used in making insecticides. *Napoleona imperialis* had many of its interesting flowers open, and was a plant some 12 feet high. The beautiful *Odontadenia speciosa* covered an arch and was gay with chocolate flowers. *Thunbergia laurifolia* and *T. grandiflora* scrambled over the greenhouses in company with the weird flowered *Tecoma ceramensis*.

The sealing-wax palm makes a fine avenue on the lower ring road, with *Araucaria Cookii* towering over all. The flower garden was very bright with Cannas and such plants as *Ixoras*, etc. A very beautiful spot is the lake, which covers 4 acres and has well arranged plantings of such good water lilies as *Nymphaea Lotus* in white, rose and yellow forms. *N. capensis* and its variety *zanzibarensis* also grow well, and so does the lemon *N. mexicana*. The flowers of *N. Lotus* open in the evening and the others during the daytime. On the island in the centre is the Siamese screw pine *Pandanus Kaida* and the native palm *Oncosperma tigillaria*, accompanied by tree ferns and *Hedychium*. About the lake shores are various economic plants such as the Mango, Durian, Cohunenut, Mangosteen, Tamarind, Cola, and many others.

In all tropical gardens Hibiscus plays a large part as a decorative plant and is often used as a hedge plant. In Singapore there is a fine collection of hybrids in which many species have been used to give a wide range of colour to the flowers, which are also of large size. The chief species used in making these crosses are *H. rosa-sinensis* from China, *H. Waimeae* from Hawaia, *H. liliflorus* of the Mauritius, and the tropical African *H. schizopetalon*. The large bamboo *Gigantochloa aspera* makes very tall plants. Parasites flourish and epiphytes revel in the moist heat.

On the north side of the garden 12 acres of jungle have been preserved, and in this *Nepenthes ampullaria* was flourishing, apparently without any attachment at all.

Owing to lack of a proper resting time orchids, with some exceptions, such as the Vandas which are used as bedding plants, do not flourish very well in Singapore.

From Singapore I took by a Dutch boat the 36 hours' journey to Java, midway between Sumatra and Madura. It is generally believed that at one period these islands formed part of the Australian Continent, and evidence of this is seen in both the fauna and flora.

The agriculture of Java divides itself into two classes—the native cultivation of rice, and the large-scale European cultivation of sugar, rubber, tobacco, tea, cinchona, coffee, cloves, nutmegs and tapioca. About 23 per cent. of Java is under rice, and in 1923 no less than 3,300,000 tons were produced, and even this was not enough to feed its dense population. Cassava, Indian corn and sweet potatoes are also largely grown for native consumption.

Of the exportable crops, sugar is easily first and comes next to Cuba for the supply of cane sugar, nearly 2,000,000 tons or about 10 per cent. of the world's production being exported annually. This sugar, like tobacco, is all grown on the alluvial plains of Central and East Java. The Government does not allow the rice area to be diminished or the land sold to the foreigner, so the sugar and tobacco growing companies lease the land from the smallholders once in three years for the cultivation of a single crop. When the sugar is growing it is fed with sulphate of ammonia, and a certain amount of nitrogen is left in the soil for the rice which follows, and larger yields are obtained. In the same way the tobacco is fed with phosphates, part of which is left in the soil for the rice which follows.

Cinchona is one of the interesting crops of Java and, I believe, about 90 per cent. of the world's supply of this drug as quinine is exported from Java. The Government itself owns a Cinchona estate which has an experimental station attached to it and from which seeds and seedlings are sent out to other estates.

You are landed in Java at the port of Batavia, which is a quaint old town, but the European stays in the suburb of Weltevreden some five miles distant, which is a very beautiful place with large parks and gardens in which stand the Government buildings. There are also

many pretty riverside scenes, and the houses are usually surrounded with spacious gardens, gay with flowering plants and shrubs.

The Aquarium, to which is attached a research station, is well worth a visit to see the wonderful fish of gorgeous colouring and fantastic shapes. Surrounding the aquarium is a small botanic garden with fine plants of *Achras Sapota*, *Barringtonia asiatica*, *Calatropis gigantea*, *Albizia retusa*, *Morinda citrifolia* and *Pandanus Papuana*.

Buitenzorg, 800 feet above sea level, was my next stage. This has been the residence of the Governor-General since 1745. It has a very pleasant climate and is placed amid charming surroundings. The palace itself stands within the famous gardens which were founded in 1817 by REINWARDH. Among its famous directors have been BLUME, TEYSMANN, and Dr. MELCHIOR TRUEB.

Near the main entrance are the buildings of the Department of Agriculture which is doing such excellent work for the country, and immediately in front of the entrance gates is a huge specimen of *Amherstia nobilis* which was covered with its scarlet racemes of flowers.

On the right, just inside the gates, is the tomb of Lady RAFFLES, whose husband Sir S. RAFFLES was Governor during the short time Java was under British rule. The main drive is a canopy of Canarium trees, the trunks of which are clothed with many epiphytes such as *Fagraea littoralis*, *Epipremum mirabile*, *Scindapsus aruensis*, *Philodendron erubescens*, *Freycinetia funicularis*, etc., etc.

This avenue leads to the Governor's palace. The pond in front is covered with the white *Nelumbium tuberosum*, and near by the huge *Victoria regia* spreads its leaves and raises its flowers to the sun. I have, however, seen larger plants in the Lily House at Kew.

Buitenzorg impressed me as possessing the richest collection of plants I saw in any garden on my travels, and, moreover, everything is very well done. In gardens where plants have to be grouped as they are here in families, it does not always make for the best landscape effects, as they are apt to get too crowded; but it is a convenience to the student who wants to work at any special group of plants, as any individual plant is easily found.

Especially striking among the Leguminosae were many species of Calliandras with vivid red, rose-coloured and white flower heads resembling "powder puffs." The Cassias were also very showy, among them being *C. multijuga* with golden yellow blossoms, *C. moschata* with brownish-yellow flowers, and *C. fistula*; the pipe Cassia was also very fine.

In the section given over to Agaves and Furcraeas were some huge specimens of these fibre yielding plants, and near by the Yuccas, Cordylines and Pandanus, the latter propped up by their large buttress roots and the spirally arranged leaves giving them a weird appearance.

The fern collection contains some huge specimens of *Angiopteris javanica*, and *A. sub-furacea*. *Alsophila Van Geertii* was very good, *A. glabra* in quantity, and the rarer *A. saparenensis* was also noted. Very like an *Angiopteris* was *Macroglossum Smithii*. Among other

genera was a large bifurcated form of *Asplenium nidus-avis*, *Davallia*, *Platynerium* and *Adiantum*s.

The orchid quarter adjoins the fernery, these plants being grown upon the branches of *Plumieria acuminata* for which they have a special liking. Chief among the genera noted were *Dendrobium*, *Erias*, *Coelogynes*, *Cymbidium*, *Bulbophyllum*, and *Arachnis Lowii*.

Buitenzorg has an excellent collection of water plants, some of the smaller ones like *Eriocaulon* being grown in tanks within the frame ground, and others in a small lake at the bottom of the garden. In this pond was a large example of the marsh *Vanda Hookeri* in full flower. *Sagittaria subulata* and *Aponogeton echinatus* were also very good. *Monocharia vaginalis* covered with its violet flowers, many species of *Nymphaeas* bright with their various coloured flowers, and the interesting *Neptunia* and *Crytosperma Johnstonii* were a few of the good things seen at their best under tropical conditions.

Near this water garden is the palm collection, which is claimed to be the finest in the world and is very rich in species and genera from the 70-foot (or more) *Latanias* and *Scheeleas* to the smaller *Raphis flabelliformis* which only grows a few feet.

From this point a bridge spans the Tjillwong river to where beds are set apart for the smaller growing shrubs and herbs in natural order beds. This section is very well kept and worth visiting, as one sees many temperate things growing among those of the tropics; the latter are of course the happier, but it is remarkable how well some things of the temperate region grow here. At the end of this section is a collection of *Musas* in great variety, from those which are grown for their fruits to the smaller *M. coccinea* with its brilliant red flowers. The decorative *Heliconias* have to be seen under conditions such as obtain here to appreciate how beautiful they are compared with the attempts in our own stoves, and so do the many beautiful flowering climbing plants which have a large section devoted to them, where they are trained over the stems of other trees.

Hoyas are well represented, and so are the *Dischidias*, among them the interesting *D. Rafflesiana* which has two kinds of leaves, ordinary flat leaves and pitcher leaves.

Recrossing the river by another bridge, you are among the *Moraceae* and *Dipterocarpaceae* which make huge trees towering 150 feet to the sky, many of them having large buttress stems to support so high a trunk.

Mention must also be made of the giant bamboos which grow to a great height and make a fine setting planted along the banks of a stream which runs through the garden to the river at the lower part of the grounds.

During my stay in Buitenzorg I made an excursion to the tea estates at Tjiapoes, which takes you through some very fine scenery with Mount Gedah in the background and Mount Salak to the right. The tea was grown from 1,600 to 3,500 feet elevation and was very vigorous and healthy, and the factory is a model one.

My next stage was to Garoet by the railway which, after curving round the slopes of Mount Salak, runs on through a famous hill region of tea, rubber and cinchona estates, with rice fields breaking the level of the plains and valley with their lines of division, and the climbing terraces which appear to go to the very hilltops. After about 2 hours ride you reach, at 4,700 feet, the most picturesque part of Java, and soon the Plain of Leles bursts into view, networked with green dykes and terraced rice fields which gleam and glisten in the sunshine. These are relieved only by clumps and masses of fine-leaved trees and palms which indicate the presence of some village.

Arriving at Garoet, you find it an exceedingly beautiful town so completely smothered in vegetation that at many places you can only see one house at a time, with the mountains which surround it towering over all. The native bazaar should be visited, not only for the interesting vegetable products but also for the beautiful basket work made by the natives from grass and palm leaves.

Garoet is a big centre for the old volcanic craters, and a trip was made to that of Papandajan. The first part of the journey was made by car, gradually rising to 4,600 feet to the hotel Villa Pauline where the car is left, and the next 2,000 feet is done on the backs of ponies up a mountain path, the bottom part of which has cinchona and tea plantations at either side, with numerous flowering plants in the hedgerows, among which *Tithonia speciosa* was conspicuous.

The ascent now gets into the pure forest region, and for the next two miles is varied by short, abrupt stages, to long winding inclines, the whole of which is a joy because of the varied flora to be seen. As you near the top of the crater you get into a temperate region with ferns and Ericaceous plants, and right on the edge of the crater itself *Rhododendron javanicum* covers 200 or more acres.

Finally you are in the crater itself with a large open space bordered with steep walls on three sides. In this open space numerous sulphur springs boil up and leave the sulphur deposited round them.

Djoekja, the sixth largest town in Java, was my next destination, and here one finds old Javanese customs more strictly adhered to than in any part of Java, and the fruit and vegetable market of great interest owing to the varied wares to be seen there.

The most beautiful of all the old Buddhist ruins, the Borubuddha Temple, is 26 miles from here and is easily reached by car, which runs by the side of sugar and tapioca plantations, the latter of which was being harvested. The temple is a gigantic stupa built around a hill which it encloses by a series of galleries, four in number, on the top of which rise three terraces.

The last part of my journey eastwards took me to Sourabaya, the largest commercial port of the Netherlands East Indies, the train going through a rather flat stretch of country which is the chief sugar growing part of Java. Other crops were tuberose, grown for the scent for soap making, *Acacia Farnesiana* also for scent making, and tapioca.

HARDY HEATHS.

By D. FYFE MAXWELL, F.R.H.S.

[Read April 24, 1928 ; The Hon. H. D. MACLAREN in the Chair.]

FOR many years this country has sent plant collectors to the ends of the earth to find new and wonderful plants with which to delight the eyes and gladden the hearts of those who garden, and these adventurous spirits have brought us Orchids from the humid forests of the tropics and Alpine plants from the bleak pinnacles of the world.

While reaching for these desirable but distant blossoms, we have—until lately—rather overlooked the flowers around our feet. I refer particularly to the Hardy Heaths.

There are fourteen species of Hardy Heathers, responsible for between 110 and 120 varieties and hybrids now in cultivation. Nearly all these were found growing wild on the moor or hillside, many in our own country. A few have occurred as chance seedlings in nurseries and gardens and—so far as I have been able to ascertain—none has been the result of premeditated hybridization.

The point to which I am steering is this : there must be numberless varieties and hybrids of Hardy Heathers in Europe and even in these islands, simply crying aloud to be admitted into our gardens. As an illustration I mention *Erica australis* from Spain and Portugal. There are only the type and a white variety in cultivation. *Erica stricta* from Corsica has no cultivated varieties, and *Erica multiflora* from France, though I am informed there are a few gardens containing specimens, is unobtainable (that is the true plant) from any nursery in this country.

The Heath garden is as yet an infant, but a lusty and determined child, that is destined to make its mark in the gardening world. To be quite frank, it is not every gardener's fancy. Those who can only delight in masses of bright colours and find pleasure in huge blooms, will not appreciate the Heather garden. No, the Heather garden is essentially a wild garden : it appeals to those who love a rocky hillside and a sweeping purple moor. There is in it something of vastness and freedom, something of the hum of winged insects, of butterflies floating by on the crest of a breeze like bright flowers that have broken loose from the bonds that bound them to earth. There is the odour of the Pine woods, and the sight of the purple that stretches away to the sky.

There are two distinct types of Heather garden : the Mountain Heather garden and the Moorland Heather garden. The former is modelled on the lower hills of our mountain ranges, such as occur in Scotland, Wales and other parts. To build a Mountain Heather

garden the ground should be mounded up into high hillocks and dug out between the heights, that is, if the natural soil is not clay. A bold effect should be maintained throughout: rough, craggy out-crops, other than limestone, must be introduced, but the effect of a Rock garden planted with Heathers should be avoided at all cost. The outcrops must be occasional rather than general. Some of the hills may be of a gradual slope on the one side, with just a few half-buried stones showing, but thickly planted with Heathers; whereas the other side is a precipitous rocky drop, with only a limited number of footholds where Heathers can be planted. A few rocks at the base of the slope, as though weathered and fallen from the cliff above, will add a touch of verity to the scene.

Other hills can be formed with the slopes gradual on every side, but these slopes should not be of a uniform gradient, or the effect will be dull. Let the angle of the incline vary as it ascends, and smooth curves be the exception and not the rule. It is scarcely necessary to add that no two hills should be exactly similar. If an ample supply of water is available, a mountain rivulet with its falls and pools running from the side of one of the hills and winding through the valley below, adds to the general beauty.

The paths should be mere tracks—narrow, winding and unexpected. They may be carpeted with the white-, pink-, and red-flowered varieties of the prostrate Thymes, which are quite in keeping with the Heather garden. Alternatively, they may be planted with the tiny prostrate varieties of *Calluna vulgaris*. A pleasing effect can be obtained by using both the Thymes and the Heathers. It will be found that when the plants are established, they will withstand as much walking upon as will grass.

The Moorland Heather garden is a simpler and less costly affair, as, for one reason, no stone is necessary. It consists of flat stretches and slightly undulating slopes, with similar paths to those recommended for the Mountain Heather garden. As both these are "natural" gardens, it is better that they should not be in close proximity to anything formal.

Apart from the two distinct types of Heather garden proper, Heathers can be used with distinction for the following purposes: the dwarf kinds make a splendid edging to a flower or shrub border; the taller kinds, planted as hedges, are as delightful as unusual. The smaller sorts are attractive planted in formal beds—as at Kew Gardens—one sort to each bed, and kept clipped to a level. No shrubbery should be without the taller Heathers, and the Bee-keeper will be well advised to plant a goodly patch of the autumn-flowering varieties, a time when bees are searching for flowers, in quantity, of a suitable character to meet their requirements. The smaller winter- and early spring-flowering Heaths are sometimes grown in some hidden part of the garden, or possibly on the strip put aside for the raising of nursery stock, for the purpose of lifting and potting just before the flowers expand, and are then used in the conservatory or dwelling-house.

One continually hears the remark: "Heathers require a special soil, so, of course, they would not do in *my* garden." At a rough computation, I should say 95 per cent. of the gardens in this country could grow some kinds of Hardy Heathers without the importation of a particle of soil. The one essential for every sort of Heather is sun—all there is to be got. They will grow in the shade, but will not produce a satisfactory crop of flowers. The ideal medium for every sort of Heather is a light soil which contains no lime, and a calcareous soil is certain death to well over three-quarters of the kinds in cultivation. The remainder are indifferent to its presence. Some sorts will prosper on quite a heavy soil, a few will excel in boggy ground, and there is at least one species that delights to grow in a hot, dry position, in almost pure sand.

But to return to the Heathers themselves. They are all evergreen shrubs varying from 2 inches in height to perhaps as much as 10 feet, in this country. The flowers of the various species and varieties pass from white through pink and red to purple, and they produce blooms at such different times that there are some in flower during any month of the year.

It is obviously impossible fully to describe all the varieties, so I will say a few words about the species and mention which are, in my opinion, their best varieties. First the taller growing sorts. *Erica arborea*, the tree Heather, hails from southern Europe, northern Africa, and the Caucasus, where it grows to a height of about 20 feet. In this country, however, it is seldom taller than 6 to 8 feet, except in very favoured districts. The habit is bushy and close, and somewhat suggests the growth of some of the Conifers. The flowers produced from February to April are white and Hawthorn-scented. Briar pipes are manufactured from its roots, and not from those of the Rose, as is sometimes supposed. *E. arborea alpina* or *E. arborea montana* is a variety that emanates from a higher elevation, is rather smaller in growth, has paler green foliage, and flowers a little later. It withstands the cruel winter winds with more fortitude than does the type.

Erica australis is the most beautiful of the taller sorts. It grows quite quickly into a bush of 6 or 8 feet in height, is more or less pyramidal in shape, and olive-green of foliage. The rather large tubular bright pink flowers are produced in clusters at the ends of the shoots from April to May. The buds begin to appear in November and December of the preceding year, and the blooms, when expanded, are produced in such profusion as almost to obscure the bush on which they are growing. The tips of the shoots are liable to be cut back during a hard winter, if planted in an exposed position. It is a native of Spain and Portugal. Apart from its incomparable beauty, it is invaluable to the Heather gardener owing to the time of year at which it flowers. May, the month of plenty with most flowers, is a lean month for Heathers. There is a beautiful white-flowered variety of recent introduction, called 'Mr. Robert.' Both this and the type

require cutting into shape periodically to correct an otherwise top-heavy habit of growth. This species has the reputation of being a lime lover, but, personally, I have found it distinctly calcifuge.

Erica lusitanica (syn. *Erica codonodes*), from southern Europe, is somewhat similar to *Erica arborea*, and has light green foliage. The general appearance—when not in flower—rather suggests kitchen-garden Asparagus when fully grown, but is very much denser. The flower-buds are tinted pink, and the flowers expand pure white between the months of December and April.

Erica × *Veitchii* is a hybrid between *E. arborea* and *E. lusitanica*. The growth and foliage is similar to that of *E. lusitanica*, and the flowers, which are sweetly scented (like a faint odour of Hawthorn carried on the breeze), are pure white, while the flower-buds have not the pink tint which is present in the buds of *E. lusitanica*.

Erica stricta has terminal and slightly drooping clusters of pink flowers, which soon fade. These blooms do not expand consecutively up the stems, as is the case with most Heathers, but burst into bloom here and there about the bush. General effectiveness is thus sacrificed to a lengthened flowering period. Excepting the dull and insignificant-flowered *E. scoparia*, this is the only one of the taller-growing sorts to produce bloom in the summer months; it continues to flower from June to October. The bush, which is brittle (whole branches will snap off right from the base under the slightest provocation), seldom reaches a height of more than 6 feet. After a few years' growth, it forms a curious-shaped bush. Picture a bell-glass (as used in French gardens) reversed and standing on the knob. That is roughly the shape of *E. stricta*, the knob of the bell-glass representing the main trunk from which spring the branches. This shrub, which comes from southern Europe, will do well in limy or chalky soil, and will succeed in rather heavier ground than many of the other kinds. It is a thoroughly useful and distinct species.

Erica mediterranea is the last of the taller species. It has bushy, upright growth, dark green foliage, and produces pink flowers between the months of February and May, the time varying slightly according to locality and the intensity of the weather. The green buds are formed in early winter. It is a native of western Europe and is one of our six native species of Heathers, being found wild in parts of Ireland, notably Galway and Mayo. It seldom exceeds 5 feet in height. The Mediterranean Heather is not one of the most showy of the hardy kinds, the pink flowers being rather a dull shade. It is a plant, however, that should on no account be left out from a Heather collection, owing to its easy culture, the time of year at which it flowers, and the fine-shaped bushes it assumes. It will succeed on chalky or limy soils, and is, therefore, doubly valuable to many gardeners. There is a variety called *E. mediterranea superba*, which has flowers of a rather better pink than those of the type, and is even stronger in growth; also a tall-growing white-flowered variety of continental origin. There are several dwarfer varieties from Ireland of which

the following are splendid. *E. mediterranea hibernica alba* is one of the finest of the white Heathers and *E. mediterranea hibernica* 'Brightness' is also of outstanding merit. The foliage is dark green, and it is covered in winter with deep bronze red buds, which open into bright pink flowers in spring. I find that this variety—the true stock—varies in colour to a considerable extent in different soils and districts.

Erica carnea, the mountain Heath of Switzerland and other European countries, is quite dwarf in habit, seldom attaining a height of more than 6 inches. The flowers, which are large considering the size of the plant, are bright pink in colour—that is, the calyx and corolla—while the stamens are a deep rich brown, standing out beyond the flower and forming a very pleasing colour-contrast with the pink. The green flower-buds are formed in August and the blooms expand during winter and early spring. This species does not object to lime and will succeed in a quite heavy soil. The three best varieties of *Erica carnea* are *Vivellii*, 'King George,' and *præcox rubra*. Of the three, *Vivellii* is the best. The buds formed in August are a rich reddish-bronze colour, and the flowers that open in late winter are a brilliant carmine-red. The calyx is a shade deeper in colour than the corolla, and the stamens are deep rich brown. The foliage in summer is dark green, but it changes to a brownish-red colour during the winter. It is of continental origin, and was introduced to this country from Holland. The other two varieties of outstanding merit, 'King George' and *præcox rubra*, flower in the early part of the winter and produce blooms of a good dark red. The last-named is the darker of the two.

Erica \times *darleyensis* or *Erica mediterranea hybrida*, as it is often called, occurred as a chance seedling at Darley Dale in Derbyshire. It is intermediate between its parents *E. carnea* and *E. mediterranea*, and is a most satisfactory and free-flowered winter Heath, generally bursting into bloom about January and lasting in flower until April. It is happy in a limy and heavy soil.

Erica ciliaris, Dorset Heath, is by far the most beautiful of the native species. The rich pink of the flowers contains little of the blue which is to be found in most of the coloured Hardy Heathers. Fifteen to thirty flowers are produced along the last 2 or 3 inches of the stem, with few, if any, leaves between them. The individual blooms are nearly half an inch in length, and are, roughly speaking, egg-shaped. The lower flowers on each stem fade and are brown before the top buds have expanded. The growth is soft to the touch and often a little sticky, and the stems are less stiff and twiggy than is the case with most heathers. The leaves are oval and small, bearing a fringe of comparatively long hairs around the edges. In this species the leaves are only slightly turned under at the edges, but in most Heaths the edges are rolled under almost to the mid-rib, so that to a casual observer they would appear to be thick and linear, whereas in reality (when unrolled) they are comparatively thin and ovate. Thus there is a

minimum of leaf-surface exposed to the elements from which loss of moisture through evaporation can take place. *E. ciliaris* grows near Wareham in Dorsetshire and Carclew in Cornwall. Though it generally grows in boggy, peaty soil in the wild state, it succeeds admirably under cultivation in any light, lime-free soil. The best varieties are 'Mrs. C. H. Gill,' which has deep red flowers, and *Maweana* which has a stiffer and sturdier growth, is dwarfer in habit than the type, and the flowers are larger and of a deep shade of pink.

Erica vagans, the Cornish Heath, is indigenous to Asia, Egypt and southern Europe, also Cornwall, and Waterford in Ireland. In the wild state it nearly always grows above the multi-coloured Serpentine rock, though in cultivation it does not appear to pine for the companion of the wild state. It seldom strays very far inland, and is gregarious to the last degree. This Heather succeeds excellently when growing in a firm loam, in fact, better than when situated in a sandy-peat soil. It is in flower from July to October, grows to a height of 2½ to 3 feet, has stiff upright stems and narrow pointed leaves, deeply rolled under towards the mid-rib. The flower shoots are closely packed with bell-shaped blooms of purple, lighter purple, rose or nearly white. The anthers vary in colour on different plants—some are dark purple, some red and others a light brown. They form a circle beyond the corolla until the pollen is shed, when they fall to the sides. One cannot pick out any particular colour and say "This is the type"—any one of the colour forms mentioned above is as common as any other. The best varieties are 'St. Keverne,' pale cerise; 'Mrs. D. F. Maxwell,' deep cerise; 'Lyonesse,' with pure white corolla and light brown anthers; and *rubra*, with dark reddish-purple flowers.

Erica Tetralix—the cross-leaved Heath—one of the three common Heathers native of this country, usually occupies the wetter parts of the Heathland. The waxy flowers, of varying shades of clear pink, paling towards the stems, are arranged on short flower-stalks in drooping terminal clusters, and, as a rule, the blooms in each cluster face in one direction. Albinos are more common in this species than in any other of the native Heaths. The flowers expand from June until October, and the season's crop, having to straggle out through this long period, makes it a rather less effective plant than most of the other sorts. The cross-leaved Heather seldom grows to a height of more than 9 inches. The best varieties are *alba mollis*, with white flowers and silver foliage; 'Rufus,' deep red flowers; 'Ruby's variety,' having flowers of a dead white with bluish-purple lips, suggestive of the most delicate brush work; *Mackaiana*, a variety of Irish origin with deep pink flowers; and *Mackaiana plena* with double pink flowers.

Erica cinerea, the bell, or fine-leaved Heath, is another of the common British species. The leaves appear to be very fine, owing to the fact that the edges are tightly rolled underneath towards the mid-rib. This species succeeds best in dry and very light lime-free

soil. It grows to a height of 1 foot, and produces its flowers from July to September. *E. cinerea coccinea* is quite the best of the Bell Heathers. It is much smaller than the type, with very dark green foliage, and grows to a height of about 6 inches. The flowers are of a deep rich carmine-red colour, and it is the earliest of the varieties of *Erica cinerea* to flower, the blooms usually opening during the latter part of May. Rather similar to this variety, but a shade larger in growth and a little later in flowering, is *atro-sanguinea*. *Cinerea alba minor* is a dwarf variety with white flowers. 'Apple Blossom' has flowers of white, delicately tinted shell-pink; *rosea* is rose pink; 'Frances,' a distinct variety, has dark green foliage and cerise flowers; 'Golden Hue' has golden yellow foliage and purple flowers.

Calluna vulgaris is the third and the last of the common British Heaths. It is the Heather of Scotland and the Ling of England. No further description is necessary. There are at least a dozen white varieties, but the best of them are *Hammondii*, *pyramidalis*, and (flowering later than these) *Serlei*. *Alportii* is the most distinct of the coloured varieties, having bright crimson flowers. There are two sorts with double flowers, both effective, but the new one, 'H. E. Beale,' collected from the New Forest, is really remarkable. Compared with the older variety, the flowers are a shade paler pink, the blunt petals fold further back, and the flower spikes—which are freely produced—are from 8 to 10 inches long. There are several coloured foliated varieties, the best of which are 'Mrs. Pat,' green foliage with pink tips; *cupraea*, with coppery foliage; and *aurea*, golden foliage.

There are a number of hybrids between *Erica ciliaris* and *Erica Tetralix*, and the following are the best of these. 'Dawn' is a striking new hybrid of dwarf habit, with individual flowers as in *E. ciliaris*, but darker in colour and arranged on the flower stalk after the style of an elongated *E. Tetralix*. The foliage resembles *E. ciliaris*, and it continues to throw up flowers from June to October. 'Gwen' is similar in habit to 'Dawn,' but the flowers are a pale pink. Both these Heaths flower the whole summer and autumn. *E. × Williamsiana* is a natural hybrid between *E. Tetralix* and *E. vagans*. It is like a dwarf and much-branched *E. vagans* in growth, with masses of small flowers of a pleasing pink, produced up the stem (much as they are in *E. vagans*) and occasional tufts of flowers lower on the stem, which rather suggests the element of *E. Tetralix* struggling to be represented. Like *E. vagans* it does well in a comparatively heavy soil. It flowers from July to September, or even later, and reaches a height of 6 to 8 inches.

As to the propagation of Hardy Heathers, there are several right ways and at least one really wrong and bad way. The way not to propagate Heathers is to plant them deeply, so that roots may form up the stems, then lift and divide them. It produces shapeless, woody plants that are old before they are young. It is a bad system in the garden, when young plants are only required in comparatively small

numbers and not every year, but in a nursery where young stock is raised by the hundred-thousand yearly, it is much worse. Stocks that are subjected to this drastic treatment each year become absolutely devitalized. Existence becomes a struggle in which all remaining energy is exhausted, so that the plants are unable to produce anything like a reasonable crop of flowers. Seed is quite a sound way of reproducing species, but in the case of varieties it is useless, as one cannot rely upon the young plants being true. I will not waste your time by describing how the seeds should be sown. The procedure is exactly similar to that required by any other hardy plant that has tiny seeds, except that lime-free soil in which Heathers have been growing should be used, and the seed sown as soon as it is ripe.

Layering is a sound way of increasing Heathers if young plants are required only in small quantities.

The best way to propagate Heathers is by cuttings, but the operation requires infinite patience. Take a 6-inch pot and fill it to within 3 inches of the top with small crocks; then cover the crocks with a thin layer of dead leaves or coarse peat. Next obtain some lime-free soil in which Heathers have been growing, and pass it through a $\frac{1}{4}$ -inch sieve—adding a little sand if necessary. Then place an inch depth of the mixture in the pot and fill up to the top with clean, coarse silver sand.

All the Heathers strike better when short lateral growths, $\frac{1}{2}$ inch in length, are employed, except *E. carnea* and its varieties, in which case the young tips should be used. The cuttings should be removed from the old plants by pulling them downwards, so that each comes off with a tiny heel. The cuttings must be placed a $\frac{1}{4}$ inch to $\frac{1}{2}$ inch apart, according to their size. It is then possible to get from 150 to 250 in a 6-inch pot. The cutting pots are best kept in a frame within a greenhouse, but this is not always possible, in which case either a cold greenhouse or garden frame will do quite well. The lights should be kept closed down over the cuttings, but air must be given to them twice a day, for periods of a quarter of an hour or so. At the same time any moisture that has collected on the glass should be wiped away. It is necessary to prevent the direct rays of the sun from reaching the cuttings by means of a single thickness of newspaper (or some other light-shading material that will not cast a coloured light) laid on the outside of the frame-light whenever necessary. Watering should be undertaken by means of a mist-spray syringe. A water-can with the finest possible rose provides a too forcible flow of water to permit the tiny cuttings to maintain the perpendicular. In really hot weather the cuttings will require to be syringed as many as three times a day, but in cooler and duller weather perhaps only one spraying will be necessary. The cuttings take from three to six weeks to root, according to conditions prevailing and their variety. The best time to take cuttings from the summer- and autumn-flowering kinds is in July and early August, and the winter-flowerers in May and June. As soon as the cuttings are well rooted they should be potted

into 3-inch pots in a light lime-free compost. In nine months to a year these plants will have become 3 to 6 inches in height with pots full of fibrous roots. They are then ready to plant into their permanent quarters, where, under reasonable conditions, they will grow quickly into well-shaped strong plants.

It will be seen that it is much more trouble and more costly to produce plants from cuttings than by division. The extra work and expense, however, are amply justified by results.

Let me remind you that the Heath garden provides flower the year round, requires the minimum of attention, and is one of the most natural—and if I may say so—unspoilt forms of gardening. It is the El Dorado of the man or woman who seeks what Wordsworth terms “the obscurities of happiness.”

SOME ROCK-GARDEN PLANTS AT "CAMLA," FELBRIDGE.

BY F. W. MILLARD, F.R.H.S.

My first intention was to entitle this article "Alpine Plants," but many plants suitable for a rock-garden have no claim to be classified as such, and the heading selected will allow of my roaming over a rather wider field. A lady friend asserts that the whole fraternity should be named "all-pine," but that remark only explains the difficulty she finds in growing them, a difficulty it is to be feared besets many.

My methods of growing rock plants have been styled very unorthodox; at least, Mr. BOWLES (there is only one Mr. BOWLES) described my small garden as the most wicked he had ever seen, as it upset all his preconceived theories concerning plants. I had, he said, plants thriving in positions where, according to all precedent, they ought to have died ten minutes after having been placed there.

It is very true that positions and conditions which encourage lusty growth in one garden utterly fail in another, but I think many enthusiasts are too ardent slaves to rule o' thumb, and were they to be a little more courageous in selecting sites for plants they would meet with greater success. There is another tendency to which many growers give way, this being fussiness; they never allow plants time to settle down, and if plants do not at once appear perky they are removed to another place. That sort of thing spells the doom of many. Some intensely dislike root disturbance, and are even inclined to resent a mere shift from a pot to the open ground, however carefully the operation is performed. Therefore, give them time to recuperate. I have a patch of *Shortia galacifolia* which for three years simply stagnated; after that period it ceased to sulk, and now charms everyone with its flowers. It would be wrong to say that a plant never needs removal, but when one is seen looking unhappy, and bearing in mind the marvellous recoveries which occur, I am more inclined to procure fresh plants, and experiment with them in a new position and different soil.

When rock-gardens are being built too much attention is often devoted to the placing and appearance of the stones, and too little to the actual requirements of the plants. No one cares to see a rock garden looking as if the stones comprising it had been tipped out of a cart and left, but when it is properly clothed with plants, faults which offend the critical eye of the geologist should be concealed. Although the pocket system was condemned by the late Mr. FARRER I am decidedly in favour of it, if only because each group of plants may be provided with exactly what they are known to like as regards



FIG. 37.—LUPINUS LEPIDUS.

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FIG. 38.—*OXALIS LOBATA*.



FIG. 39.—*GENTIANA SAPONARIA*.



FIG. 40.—*CAMPANULA AUCHERI*.



FIG. 41.—*NIEKEMBERGIA RIVULARIS*



FIG. 42.—PRIMULA 'EVELYN ARKWRIGHT.'



FIG. 43.—MILLIGANIA JOHNSTONII



FIG. 41 —GENTIANA VERNA AESTIVA.



FIG. 45.—*Wahlebergia serpyllifolia* major.



FIG. 46.—PRIMULA 'MARVEN.'



FIG. 47.—*OMPHALODES LUCILIAE*.



FIG. 48.—ERYTHRAEA DIFFUSA.

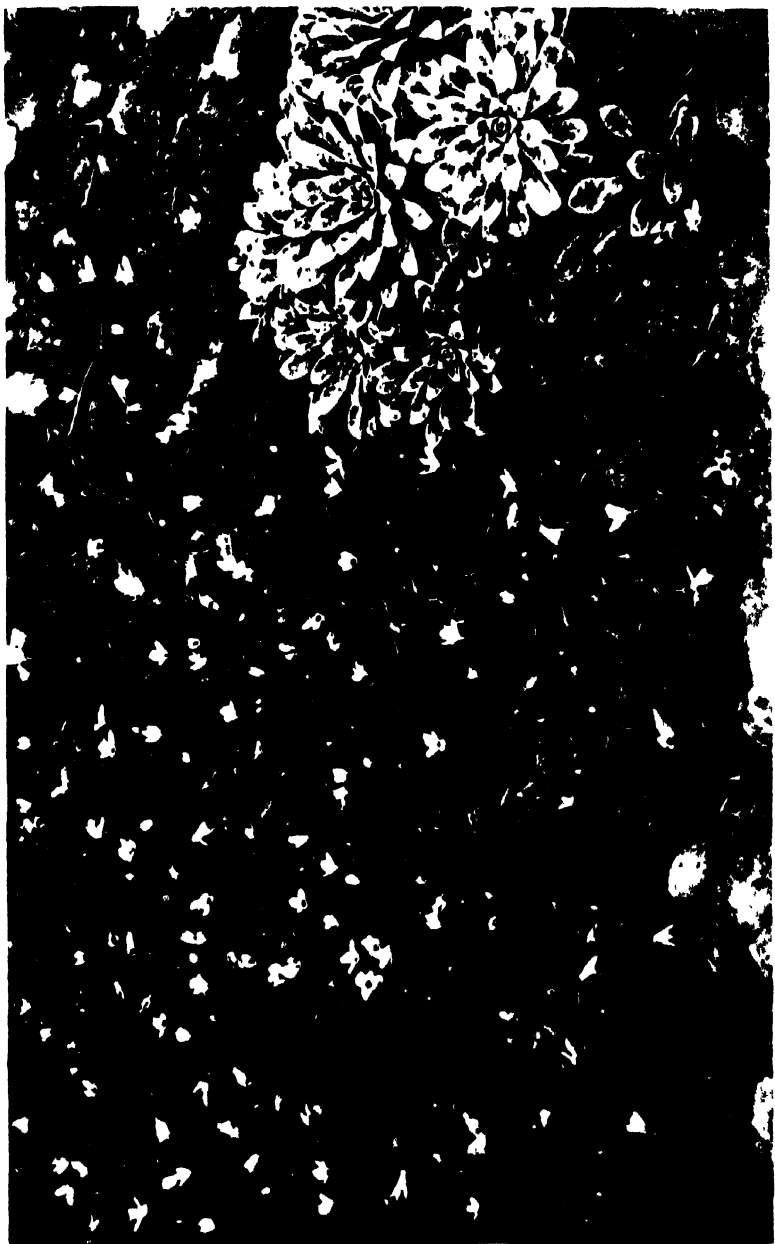


FIG. 10.—*VERONICA CANISCENS*



FIG. 50.—POLEMONIUM CONFERTUM MELLITUM.



FIG. 51. *LITHOSPHERUM PROSTRATUM*, HEAVENLY BLUE.



FIG. 52.—PYROLA ROTUNDIFOLIA.

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soil. Neither do I care for large bodies of exposed earth, for the sooner many plants are able to push their roots beneath stones, and benefit by the coolness and moisture there found, the better will they flourish and the happier they are. The advantage of this is discovered when drought prevails. Many a plant pining beneath a blazing sun would be grateful for just a few stones placed over the roots. Advice is often given to build a rock-garden over a heap of very light soil, but lightness may be carried too far. A better plan is to have a foundation of soil likely to be retentive of moisture, and a few inches of porous soil round the collars of the plants. The latter will let rain through and keep the vital collar dry and sound, and then the roots revel in the damp below. This is the secret of growing lots of difficult plants. In the same way, when preparing seed-pans, it is an excellent idea to place a thick layer of chopped Sphagnum Moss over the crocks. The roots of seedlings soon reach this, and should you omit to water they will be safe for a day or two.

Never construct a rock-garden too high unless you wish to cover the top with Sedums, Opuntias, Mesembryanthemums, and similar lovers of drought. Moisture soon disappears from the top of a very elevated rockery, and is difficult to replace. The most successful rock-gardens I have ever seen were built against banks, into which the plants were able to root deeply. There the majority of them are able to withstand any reasonable drought—if droughts ever are reasonable.

The bane of every alpine enthusiast is slugs, and the only satisfactory safeguard against these pests is to encircle a plant with a ring of zinc—not at all a pretty object if too frequently repeated. The best remedy is to go forth at night, armed with a pair of scissors, and decapitate every marauder seen. Be very careful to leave each victim lying at the place of execution, and the following evening a score may be found attending the wake. For light use an acetylene bicycle lamp. Much may be accomplished by searching in and around plants by day for slugs harbouring there, but slugs are never exterminated in that way. Some plants grow so vigorously that slugs appear to do them no harm, but it will be found that they prey on the blooms and flower-buds, with the result that disappointment is felt at the wretched show made. Complaints are occasionally heard that *Nierembergia rivularis* fails to bloom, and I have often pointed out to growers the reason. This plant develops a close, thick mat of foliage, and deep down amongst it slugs love to hide, and eat off every bloom bud as it appears. Not a bloom progresses farther than the bud stage, but rid the plant of slugs and *Nierembergia rivularis* will bloom as depicted in the illustration (fig. 41). The reader who has sufficient courage to venture forth at night with lamp and scissors is often amply rewarded by the beauties of his treasures seen beneath artificial light. Leather jackets are also a deadly foe, for they attack just beneath the surface, but are easily unearthed by probing lightly round a plant.

Visitors are frequently surprised to find plants flourishing in a garden they go to see, when those same plants in their own gardens succumb to moderately severe weather. The explanation is that when a plant is happy it is hardier, for vigorous growth enables it to laugh at conditions which prove fatal to others not so well situated. A very good example of this is that charming little thing *Nertera depressa*, which is usually seen decorating a greenhouse. Yet, plant it in a somewhat shady corner, in pure leafmould, and it is as difficult to kill as a nettle, and will berry freely. In my garden this *Nertera* has withstood 25° of frost most cheerfully.

Keen plantsmen are often heard to remark that absence of shade forbids their growing many plants, but they need no longer deprive themselves of that delight. I have yet to see the shade-lover which is not thoroughly happy in full sun, granted that the soil in which it is growing is kept moist. One great authority states that *Epigaea repens* must be grown where one needs a candle to see it, but that same plant is flourishing in my garden in an aspect where it gets all the sun, and the only care taken is to give it a soaking whenever I remember it. The same remarks equally apply to the *Pyrola* family, but plant all in leafmould, and top-dress twice a year with the same material.

Nearly all the Gentians, except perhaps *lagodechiana*, are finnickier creatures, growing fairly well in many gardens, but blooming sparingly or not at all. *Acaulis* may be characterized as the most flagrant sinner in this respect. I know a place where there is a broad band of it, in spring a sea of blue, on one side of a drive half a mile long; yet, on the other side, it cannot be induced to make even a semblance of growing. My experience is that wherever there is iron in the soil the Gentians consent to flourish and bloom, and the best way of providing it is to fork in round the plants plenty of Hassocks red sand.

The moraine is a wide subject to deal with in the space at disposal, but I should like to say that nearly every alpine plant will thrive in what I style an earthy moraine; that is, one consisting half of stones the size of the finger-ends, and the other half of leafmould, peat, and any good garden soil in equal quantities. *Silene Hookeri* and *S. pumilio* just love it, and the *Lewisia*s are veritable weeds in it, but sandstone must be provided for the lime-haters.

When on the subject of lime, it will be advisable to state that many a reputed lime-hater does not object to lime in the least if it has plenty of humus to revel in. An excellent example of this is to be seen in Sir W. LAWRENCE'S garden near Dorking, where he has *Gentiana sino-ornata* revelling in the limiest of soils with plenty of leaf soil packed round its roots. No reader with a limey soil should relinquish hope of growing a lime-hater till he has tried what can be accomplished with plenty of humus. Again, many plants which prefer lime are perfectly content without it, but the owner of a limeless garden may always add it if he thinks well. Do not use slaked building lime if old mortar rubble is procurable; it is far better to blend with the

soil crushed chalk. Nearly all the *Dianthus* tribe, except those with *callizonus* blood, love a modicum of lime, but what they truly esteem and reward one for supplying is finely ground bonemeal.

The *Meconopsis* family are supposed to dislike lime, but in my Irish garden, where lime existed to such an extent that an application of spirits of salt produced a veritable eruption, the *Meconopsis* thrive as they never do here in Sussex. Once more the secret is plenty of humus, and they never fear the sun if kept moist at the root. The flowers are more fugitive in sun, but you do enjoy them for the shorter time they remain perfect. I am certain that reputed shade-lovers bloom more freely in sun if they are kept moist, for they make a firmer growth and are consequently much hardier.

There can be no doubt that plants of equal vigour are fond of rivalry; place them so that they encroach on each other's domain and are obliged to wrestle with each other for the right to live, and the most weakly seem to rise to the occasion, determined not to be throttled without showing defiance. The beauty of many plants is enhanced when they are growing amongst each other, but some care is necessary when making the association to see that colours blend. Always be at war with weeds, moss, and *Marchantia*, all of which are capable of stifling rockery plants. Once weeds are practically exterminated, a half-hour devoted now and then to pulling them will keep them on the verge of extinction.

Now for a few details regarding the plants illustrated, some of which are by no means common. *Lupinus lepidus* (fig. 37) is a six-inch Lupin recently re-introduced from California. It is a lovely thing, prostrate in growth, perfectly hardy, but grateful for glass protection from the worst of the winter rains. The blooms vary a trifle in shade, but are always a nice blue and white. *Oxalis lobata* (fig. 38) is a plant which cheers us in autumn, when the glory of the rock garden is of the past; the blooms are real golden yellow, and in association with *Verbena chamaedrifolia* are a gorgeous sight. This *Oxalis* dies right down in May, to re-appear and bloom in September. *Gentiana Saponaria* (fig. 39) is a thing of doubt when obtained from nurseries, but if true is quite distinct and a lovely pale blue. *Campanula Aucheri* (fig. 40) is an all too rare occupant of the rockery, and in my opinion the most beautiful of its numerous tribe. Blue (a rich blue) and white are well contrasted in the large blooms, and the plant cannot be described as a lime-lover. Concerning the beauty of *Nierembergia rivularis* (fig. 41) nothing more to extol it is needed than the illustration. *Primula* 'Evelyn Arkwright' (fig. 42) is a giant form of the common primrose, gigantic only as regards the size of its flowers, which grow and grow after expanding till they exceed in size a five-shilling piece. It comes quite true from the seed it produces but sparingly. *Milligania Johnstonii* (fig. 43) is a wee *Libertia* in every particular, from Tasmania, not far removed from *Libertia pulchella*. It is a very dainty plant and never fails to attract attention.

Gentiana aestivalis (fig. 44) is the more easily grown form of *verna*, which thrives in my garden in a stony, leafy, peaty mixture, blended with Hassocks red sand. The Irish variety of this plant is a "sure doer" in the compost described, but to establish it young plants with unmutilated roots must be obtained. *Wahlenbergia serpyllifolia* (fig. 45) is a charmer and loves a limey soil. *Primula* 'Marven' (fig. 46) blooms too early for it to endure long in perfection in the open, and if its beauty is to last it demands glass protection. *Omphalodes Luciliae* (fig. 47) is a much misunderstood plant, supposed to be difficult, but put it in an earthy moraine, in shade or sun, keep it moist in the growing season, and it is an easy delight. *Erythraea diffusa* (fig. 48) does not appreciate lime, and is described as similar to a pink Gentian. It is a most beautiful thing when well done, and spreads into a perfect mat. *Veronica canescens* (fig. 49) is a "flourisher" in earthy moraine also, and when spangled with bloom may be described as a delicately nice plant. It has a funny habit of despatching its small seeds long distances, young plants being found in all kinds of out-of-the-way spots far removed from the parent plant. *Polemonium confertum mellitum* (fig. 50) has pure white blooms rivalling in size a small egg-cup. It is the beauty of a beautiful family, and grows some four inches. *Lithospermum prostratum* 'Heavenly Blue' shows in the illustration (fig. 51) of what the plant is capable when well grown. It has been described as not everyone's plant because it refuses to endure lime, neither will it flower as depicted in every soil devoid of lime. However, no matter how limey your soil may be, find this *Lithospermum* a place in the deepest shade, and you will reap some satisfaction from growing it.

THE GARDEN AT BEAMISH, ALBRIGHTON.

By MRS. S. K. GARNETT-BOTFIELD.

IN 1908 we built a house and made a garden in the middle of a large grass field. It seemed rather uphill work at first as there was not a single tree or shrub of any kind. We are on a hill, with all the sun and all the wind. There was an old marl pit in one corner and this was selected for the site of the rock-garden, and the soil out of the foundations was tipped round it, making a semi-circle with spurs running out from it.

The soil was clay and the rest of the garden is strong loam, with here and there some sand. The house was built long and low and looks like a sitting hen now, with hedges of Yew, Holly, and Beech dividing up the garden and fencing it in. We owe a great deal to our old gardener, Mr. GEORGE EDWARDS, who came to us after twenty-eight years with Mr. WOLLEY-DOD. He had a great love for plants and even weeds, or what many would call weeds, and a great reverence for seedlings. In Mr. DOD's garden I remember being much struck by seeing *Primula rosea* flourishing at the foot of Raspberry canes, and all plants there left in peace to grow where they liked; and so it came about that in our garden the plants are left at home where they choose to sow themselves. They are not raised by us but they just take their own line and sow themselves. We look after them and encourage them with top dressings and love. The field into which we came with the plants has an old red sandstone quarry in it and from this we got stones and gradually built round the marl pit the rock garden, surfacing the clay with good loam.

In 1912 we had the good fortune of getting to know Mr. REGINALD FARRER, and we went our first trip to the Tyrol to see alpine plants at home and to meet Mr. FARRER at Misurina. He told us where to go in search of all sorts of lovely plants and to look out for good forms, and he inspired us with his own enthusiasm. Later we got to know Mr. E. A. BOWLES, and he added to our enthusiasm by stocking our garden with every plant we chanced to see and admire in his. Amongst all the other plants in our garden *Linum perenne* sows itself and makes an alpine meadow with the smaller plants sheltering below. In fact, the whole garden is full to overflowing with plants that keep each other comfortable and protected. *Viola cornuta* and *V. gracilis* have clothed themselves in new forms and given us lovely seedlings. *Primula Juliae* has done the same, and has hybridized with Primroses and Cowslips. Chinese Primulas grow in the marl pit round the pool supplied by the water from the roof and the drains from under the lawn. Many rare and difficult plants thrive because they are allowed to go their own way and are not kept pining in lonely barrenness in

bare ground. Many of our treasures have been in the same place for years. For instance, *Primula minima*, which we brought from Misurina in 1912, is now a large clump growing in stiff loam on a shady ledge in the rock-garden. It is held in position by a tiny Willow, so that no unkind frost can lift it out of the ground.

Aquilegia Reuteri grows on the highest crest of the rock-garden (called Mount Edwards, after our old gardener). It is planted in stone chips over clay and it has seeded itself into a good colony; the oldest plant was brought from St. Martin Vesubie in 1914 and since then it has never failed to flower. It is shaded by a Tamarisk. We have brought home several forms of *Anemone alpina*. The largest and handsomest came from the Mt. Cenis. These were planted in 1914 and grow bigger every year and have as many as 25 to 30 flowers on a plant. We have a pretty small form, with finely cut foliage, from the Maritime Alps above St. Martin Vesubi. The backs of the petals are blue so that it is particularly pretty in bud. The interesting point is that all the local forms have remained constant in cultivation. We grow *Saxifraga lantoscana* in many collected forms—those with long leaves do best in a dry place in the sun, while the more compact rosettes like a shady slope. *Lilium pomponium* ought to be growing amongst the *Aquilegia Reuteri*, but it isn't! It is a strangely invisible plant considering that it is bright scarlet; for this reason it is hard to find in a wild state, but it comes readily from seed. We find *Primula Allionii* does better in the sun, though in its natural habitat it likes deep shade—best of all it likes to sit comfortably in a pot of mortar rubble and chips with just a little good loam, and then is one of the best for the alpine home.

To make the general view of the rock-garden effective it is a good plan to grow the more showy plants in prominent positions and keep the tiny treasures for level ground. We have a well-drained undulating place at the foot for *Gentiana verna*, *Dianthus alpinus* and *D. neglectus*, and small Saxifrages like *S. Irvingii*, *S. Burseriana* and *S. Reuteri*. *Campanula Allionii* runs about here and flowers fairly well, though young seedling plants do better.

Once upon a time we had a lovely little *Gentiana aperta* from Mr. FARRER'S Chinese seeds, but we lost it as we did not understand that the seed would be at the top of the style in a tiny box which ripened quickly and scattered its contents. We still have a perfect gem called *Gentiana hexaphylla* which came out of a packet of Mr. FARRER'S seeds labelled "Mixed Muck." It has tiny foliage in rosettes rather smaller than *Saxifraga Elizabethae*; the flowers resemble somewhat those of *Gentiana Farreri*, but they are rather brighter and have red anthers. The flower stems are prostrate but do not layer themselves like *G. sino-ornata*. *Aphyllanthes monspelliensis* grows anywhere, but in the sun it has a tiresome habit of burying its head like an ostrich, under any surrounding cover. I mean to try it in a bog, remembering how strongly it grew in one near Avignon. We have a long low bed called the Farrer Hummock for Chinese treasures, and another

undulating bit of ground with soil made of rotted spruce needles and sand: in this *Tulipa australis* is quite at home, seeding itself about and flowering well. It has not been moved for eight years. *Linum maritimum* grows under a Libocedrus on the sunny side and is thus kept warm and dry, and looks well even after this soaking January. Here, too, is a plant of *Linum salsoloides* planted in 1913, which has seeded itself about. *Oxalis magellanica*, given me by Mr. BOWLES as rather a delicacy, has run mad and has to be weeded out ceaselessly.

The rest of the flower garden is formal, surrounded by clipped yew hedges. The beds are edged with red bricks and the paths are cobble stones. Extra large ones and white ones were used to make patterns such as a circle or a cross and arrow, or a motto, and the wider paths have a central tread of three red bricks abreast and cobble sides. Though the garden is formal, the flowers were not planted for any special colour effects or in ordered ranks, but with the idea of giving a succession of flowers. One of the prettiest times is when *Campanula persicifolia* is out; it has hybridized with a stiff form I got under the name of *C. crystallocalyx* and produced a fine up-standing race. It grows most conveniently anywhere, even under a Yew hedge or on a wall, and takes up no space when out of flower—but the garden always looks full and visitors say “I suppose this is the best time in your garden.” In winter the formal beds and clipped Hollies and *Erica carnea* look charming.

MUNICIPAL GARDENS AND GARDENING.*

By W. W. PETTIGREW, V.M.H.

[Read November 29, 1927; Mr. E. WHITE, V.M.H., in the Chair.]

THE subject about which I have been asked to address you this afternoon is "Municipal Gardens" and not "Municipal Parks." Personally, I am glad the former title has been chosen, as had I been asked to speak about parks, I am afraid that the horticultural side of our work would have been overshadowed by what is now regarded as the outstandingly important function of a Municipal Parks Department—the provision of facilities for all kinds of outdoor games and amusements.

To those of you who have not followed the evolution of the modern park, it may come as a surprise to learn that the purely gardening work connected with the administration of a Municipal park is far less in extent and importance than it was some forty years ago. When it is realized that an up-to-date Parks Department, such as Manchester, derives an income of over £30,000 a year from its provision of games, pastimes, and amusements, you will understand what a large proportion of the energies of its staff must be directed to the maintenance of the facilities for producing such an income. From this it might be inferred that it is no longer necessary that a public Parks Department should have a trained horticulturist as its Chief Officer. The authorities in some towns and cities have already acted on this assumption, but to my mind, with unfortunate results, for the whole superstructure of a public parks institution being built on a horticultural foundation it naturally follows that all else being equal, a horticulturist is the right person to be in charge. In the larger parks systems, the chief officer stands somewhat in the same relation to the parks under his charge, that the landed proprietor stands to his own private gardens and grounds. The head gardeners at the various parks try to meet as far as possible the views and tastes of their chief regarding their floral displays, for, of course, in gardening matters, especially as far as æsthetic taste is concerned, the general public—who are the real owners of the park—are rarely articulate, and consequently in order to maintain a high standard it is essential that some individual must take the responsibility of giving a lead.

In order to bring home to a modern audience the great change which has taken place in the position that parks take in the public life, it is only necessary to compare the plan of a park which was laid out in 1867—the Alexandra Park, Manchester—with a park laid

* This lecture was fully illustrated by lantern slides.

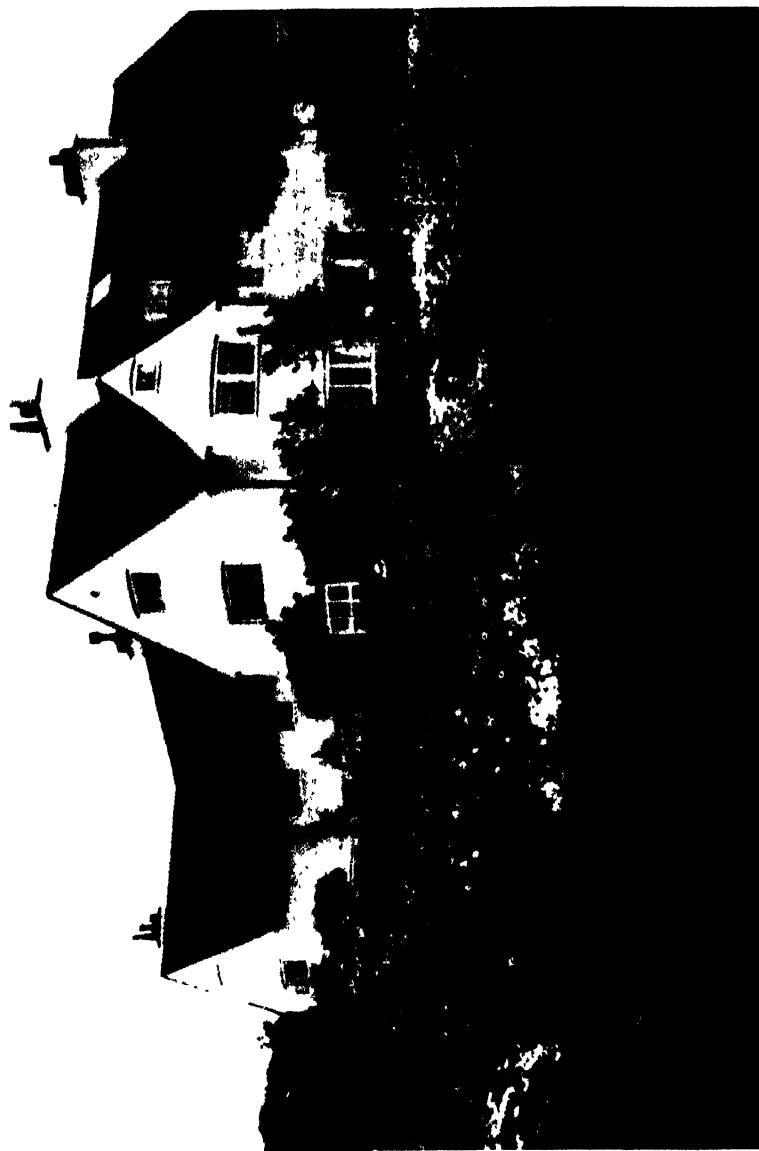


FIG. 53.—BEAMISH, THE HOUSE AND GARDEN.
(p. 269.)



FIG. 54.—BEAMISH, A CORNER OF THE POOL.
(p. 269)

[To face p. 273.

out in 1927. In the former the ideal aimed at was to provide numerous walks, flower beds and landscape effects, and to secure this the paths and roadways are winding, and the provision of flower beds and shrubberies takes up the most important part of the ground. In the latter, where the ideal is to provide as large a playing space as possible, the walks are straight and set out at right angles, and all the space available is set aside for such games as football, cricket, bowls, tennis, etc. At the same time provision has been made to meet the tastes of those who are interested in horticulture, but in this instance only such ground as cannot be used satisfactorily for games is utilized. However, the horticultural side of park work in Manchester has always held, and still holds, a very important place in the lay-out and maintenance of the public parks. Formal gardening has gone out of fashion to the decided gain of the æsthetic side of park work, but there are conditions under which even to-day it is sometimes necessary to retain the old-fashioned type of formal bedding. In the very heart of Manchester where the atmosphere is not of the purest, it would be impossible to grow herbaceous plants if they had to remain in the borders or beds throughout the whole year. Consequently, the only method of beautifying and brightening up such districts is to use the old-fashioned bedding stuff which was so popular with gardeners fifty years ago. The only variation that has been introduced in this form of bedding in some of the parks is that instead of using Geraniums, Calceolarias, Lobelias, etc., Antirrhinums and dwarf Dahlias have replaced them with considerable advantage. While it is sometimes interesting to give illustrations and examples of fashions in bedding which existed half a century ago, I regard it as somewhat of a waste of material and labour to utilize to any extent the old-fashioned carpet bedding merely to give variety to bedding designs. Many public parks still make use of this style of bedding, but in the Manchester parks it has been discontinued for many years past.

In some Municipal gardens one still sees the Floral Clock used as a part of the summer bedding arrangements. While this undoubtedly interests, and arrests the attention of, a large section of the community, it is not regarded by true garden lovers as being in good taste, and is a form of bedding which tends to make gardening appear somewhat ridiculous. As the late Dr. MASTERS used to say, if a garden clock is to be represented by flowers, it ought to be done in the way LINNÆUS did it in his garden, by growing plants whose flowers open and close at such well defined hours as to indicate the time of day.

In Municipal gardening it is customary to provide large expanses of colour, as this is found to be a good policy, attracting as it does the attention of visitors, and producing very pleasing effects. Tulips in their season are valuable for this purpose, and on this account, notwithstanding their cost, are largely used in many of our

public parks. Roses are also used with much advantage for bedding purposes, and it is well not to grow too many different varieties, but to confine oneself to the use of free-flowering kinds which are known to do well in the district. While many rose growers do not advocate restricting one variety to one bed, for public park purposes this is the ideal policy.

Although it is advisable to provide broad expanses of colour, yet it is advantageous to introduce variety of form and growth among the plants and tone of colour in the flowers composing a border, so as to add to it greater interest. Roses, Dahlias and Antirrhinums can all be used in conjunction for bedding effects with considerable success.

In addition to the growing of plants in formal beds, the border confined to one class of plant is a method of decorating a garden which is much appreciated. A most attractive border in one of our largest parks during the past season was planted entirely with stocks, which were bright and sweet smelling, and were much appreciated by the public, especially in the evening and after rain when the perfume was at its best.

In some cases formal and informal methods of using plants in the same borders add to their attraction. When this method is followed it is usual to have an outer edge of, say, candytuft or violas, or some such free-flowering plant, while the inner portion of the border is irregularly dotted over with different kinds of flowering and foliage plants. Herbaceous borders are always attractive and spectacular, and yet at the same time there is an individuality about many of the plants which makes them of great interest to those who are real garden lovers.

The attractiveness of herbaceous borders adjacent to breadths of sward is always enhanced thereby. So far as I remember the late Mr. JORDAN of Regent's Park, London, was the first to put this method of gardening decoration into practice in public parks. In addition, where the breadth of grass between the walk and the border is sufficiently great, large beds filled with one or two kinds of herbaceous plants make a very interesting feature in a Municipal garden.

The Old English Garden, of which there are many examples in different public parks throughout the country, is always a source of delight to visitors. The Old English Garden may be described as a medley of plants arranged in orderly disorder, very attractive, and at the same time intensely interesting.

Climbing roses, where they can be grown, are an invariable feature in the Old English Garden, and the freer they are allowed to ramble about their supports, the more conducive are they to produce the desired atmosphere to the garden.

Within recent years the practice of naturalizing bulbs in grass has become more prevalent in parks. While Crocuses, Snowdrops, Scillas and the like are freely used, generally speaking Daffodils are

best adapted for the purpose. So far as I remember, Kew was the first public garden where this system of growing bulbs was adopted.

In order to meet the tastes of those who are keenly interested in plants for their own sake it is always well, where possible, to provide representatives of specially interesting plants. Lupins, Verbascums, Irises, rock garden plants, Bamboos and so on have not merely a botanical interest but also an æsthetic value when placed amidst proper surroundings.

Flowering trees and shrubs are always a very valuable asset in the decoration of a public garden. Where Rhododendrons do well, there are quite a number of different species and varieties which should be grown, as they give great pleasure to the public in the early Spring. In this respect Manchester is exceedingly well off, as in Wythenshawe Park there is an excellent collection of these beautiful shrubs.

Magnolias, Berberis, flowering Cherries, and many other plants which can withstand the atmospheric conditions of towns also add considerably to the interest and beauty of the gardens when in flower.

No public park can claim to fulfil its function as a garden, unless it has facilities for under-glass displays. Unfortunately Manchester has little or no provision for the displays of Chrysanthemums, Schizanthus, and such free-flowering plants, but to make up for this it has one of the most valuable collections of Cacti in the whole country. This collection was presented to Manchester by the late Mr. CHARLES DARRAH, who spent his life in gathering it together. Since its presentation to Manchester in 1903 large additions have been made to it, so that to-day it is one of the most up-to-date collections in the country.

In the development and expansion of a growing town it frequently happens that, in order to carry out necessary improvements, numbers of valuable trees and shrubs have to be destroyed or removed. When such removals take place, the Parks Department is called upon to carry out this work. By the provision of a very powerful machine trees up to 50 or 60 years of age are quite successfully transplanted. Generally speaking, however, the cost of such removals is so excessive, and the risk of failure so great, that the authorities allow them to be destroyed rather than undertake their removal.

Another work that sometimes a Parks Department has to carry out is Tree Surgery. This also being a somewhat expensive procedure, Municipal bodies usually prefer to cut down injured trees rather than go to the expense which would be involved in patching them up by means of ferro-concrete. But even when the trunk is split in two, it may be patched up in such a way that it can withstand violent storms for years to come.

WILLOWS SUITABLE FOR GARDENS.

By J. FRASER, F.L.S., V.M.H.

ALL the Willows (*Salix*) may be put to some purpose or other in the garden, according to its size and the variety of situations to meet the requirements of the different species. All of them are sun-loving subjects or light-demanders, and for this reason they do not associate well with other trees if that means crowding or being overtopped by taller-growing subjects. The larger arboreal Willows would keep pace with forest trees, but that would mean the loss of all the lower branches and the natural beauty of form and foliage. Most people associate Willows with water, but most of the arboreal species will make perfect specimens in any deep and good loam that does not actually dry out in summer. The banks of lakes, rivers or streams are the natural situations for a large number of them, as the roots can dip down and get all the moisture they require. The smaller species will be most at home on the rockery, in the bog garden, and on the margins of rock-pools. Almost any kind of soil, except bog-peat and chalk, will be suitable, provided moisture is adequate, though the Goat Willow prefers chalky districts, and the Bay-leaved Willow and its hybrids can grow on peat.

The Bay-leaved Willow (*Salix pentandra*) makes a compact, leafy bush or tree ranging from 6 to 20 feet in height, and may be grown as a bush or standard on the lawn, for the beauty of its dark green leaves, which have the scent of the Bay Laurel when young, and vary greatly in length and width, according to the form. It is a native from Shropshire and Worcestershire northwards. The male catkins, produced in May with the leaves, are the most effective.

The White Willow (*S. alba*) makes a tree 40 to 90 feet in height, but occupies little space for twenty years or more owing to the sharp angle at which its branches are given off from the trunk. It thrives admirably on the banks of a lake, but will thrive well right away from water, in deep loam, growing more slowly, and producing a fine effect with its hoary foliage, at its best in July, when the summer shoots are in full growth. The finest of all the varieties in this respect is *S. alba argentea*, for the summer foliage appears almost white against the green background of other trees. The Bat Willow (*S. alba coerulea*) is notable for the rapidity of its growth, as well as its upright habit, while the foliage may be described as a blue-green, where the silky hairs fall away as the leaves reach maturity. There are variations, however, amongst trees grown as Bat Willows, though the more silky-leaved forms may be due to a dry soil. The Golden Osier (*S. alba vitellina*) has light green foliage, but is valued chiefly for the golden-yellow bark of its twigs in winter. A tree is effective when in bloom, owing to the great length

of the catkins and the yellow bark appearing amongst the young leaves. *S. alba britzensis* was put into commerce by SPÄTH in 1883, and is notable for the bright orange-red colour of its twigs in winter.

An effect somewhat similar to Bamboos can be obtained in summer by planting the Golden Osier along the margin of a lake, pond or stream, and stooling the bushes every year in March. Long shoots are produced during the growing season, and after the leaves fall the upper half of the shoots is deep red or crimson, while the lower half of each is yellow. There is a form of this, the bark of which is always pale yellow. Further contrast would be obtained by planting *S. alba britzensis* and stooling it, because the one-year-old shoots are the brightest.

The Crack Willow (*S. fragilis*) is most ornamental in its younger stages, say when 10 to 40 feet in height, and growing vigorously under favourable conditions. The leaves then are long and light green, while a silvery appearance is produced when the glaucous undersurface of the leaves is turned up by the wind. The branches form an obtuse angle with the trunk, and with age may sink to an angle of ninety degrees or more, so that heavy boughs are liable to get broken down. The tree seems to require more moisture than *S. alba*, probably because the leaves are not silky. Many twigs and branches also die on the upper part of the tree when the roots are in difficulty. The tree can grow 40 to 80 feet high under favourable conditions, but the outline is less graceful than that of *S. alba* for the above reasons. It is very liable to be galled by *Eriophyes triradiatus*.

The Pruinose or Frosted Willows are amongst the most ornamental of all for garden purposes on account of the size of the catkins and the fact that they appear before the leaves; whereas the leaves and catkins of the above-mentioned species and varieties are produced contemporaneously, so that the flowers are partly hidden. *S. daphnoides* makes a tree 10 to 40 feet in height or more with a stout, erect trunk, and a rounded head in exposure. Both male and female trees occur in Britain, though not native. They may bloom at any time from the last week of February to the third week of April, according to the season, to shelter, or to being exposed on a hill. Like all Willows they take advantage of mild weather and sunshine to open their flowers, but are highly ornamental from the time the buds burst till the flowers are ready for pollination, owing to the dense covering of the bracteoles with long, white, silky hairs. The male is the most ornamental when in bloom. The bark may be green in shade, but purple or violet in exposure, and covered with a waxy bloom like a plum. In 1858 WIMMER and KRAUSE gathered a Willow, intermediate between *S. daphnoides* and *S. pruinosa*, with lighter green foliage than the former, nearly erect branches, and the stature of the Lombardy Poplar. This I have seen only at Wisley. *S. pruinosa* quickly grows to be a large bush, with long, slender, drooping twigs, densely covered with a white bloom, especially in summer. The catkins are smaller and not so numerous as those of *S. daphnoides*, but otherwise as ornamental and

more gracefully displayed, owing to the long, slender withies. The buds sometimes burst in November or December, when they become a great allurements to "Palm" gatherers. This species is sometimes named the Violet Willow, from the colour of the bark, and some botanists adopt WILLDENOW's name of *S. acutifolia* for it. Only the male is known in Europe, and Eastern Europe or Asia is considered its native habitat. It was seen by BORRER in Edinburgh in 1810, and must have been introduced some years previously.

S. gracilistyla of MIQUEL is a native of Japan and North China, and was brought to notice in 1897 by MM. BARBIER FRÈRES of Orleans. The catkins, about 2 inches long, are produced in March in advance of the leaves, and the bracteoles being densely covered with long, silky, white hairs, faintly tinted with brown, they are very effective for some time before they are actually in bloom. The anthers of the male flowers are red, and the filaments partly joined, giving one the idea that it is a relative of *S. purpurea*, but the oblong-lanceolate leaves are broad, strongly ribbed, crowded on the twigs, and different from those of any other in cultivation. A garden and catalogue name for it is *S. mutabilis*, but that name has been given to three others and is, therefore, erroneous.

Altogether different from any of the above is *S. incana*, the beauty of which depends entirely on the linear, dark green leaves, clothed beneath with a white, cottony down, and resembling a Rosemary bush. The species has been named *S. rosmarinifolia* by GOUAN, but that name rightly belongs to a form of *S. repens*. *S. incana* is a native of Eastern France and Switzerland, eastwards and southwards on the banks of alpine and subalpine rivers. It grows 3 to 10 feet high, and is handsome as a bush, or grafted as a standard. It was introduced in 1821.

The British Sallows are variable in the beauty of their catkins, produced in advance of the leaves, but the male of the Goat Willow or Great Sallow (*S. Caprea*) is really handsome when in bloom and is a great favourite with bees. Some individuals have notably large catkins. Variegated Willows are very uncommon, but *S. cinerea* has given rise to more than one form, and *S. cinerea tricolor* is available in nurseries at present, with green, red, and creamy-white leaves. Syn. *S. tricolor*.

S. lanata is one of the most interesting of all Willows, because, though it makes only a dumpy bush 1 to 4 feet high, the 1 to 2-inch long catkins are very handsome owing to the dense covering of long, silky, pale canary-yellow hairs. At least, that is the colour of the catkins on the mountains of Scotland, where the plant does not get into full bloom till the middle of June and July. The leaves are woolly while expanding but soon lose their hairs. The plant likes plenty of water, which should not be stagnant, but will succeed on a partially shaded border though otherwise well lighted.

S. magnifica was discovered by E. H. WILSON in Western China in 1903, but did not reach Kew in this country till 1910 by way of the

Arnold Arboretum. It is notable in the genus for the production of leaves 3 to 10 inches long, and catkins 4 to 11 inches long. Though found at an elevation of 9,000 feet, it appears to prefer the warmer parts of this country; but we may not yet have found the right place for it in the garden.

The proper place for the small Willows, such as *S. reticulata*, *S. herbacea*, *S. repens argentea*, *S. retusa*, *S. retusa serpyllifolia*, *S. Bockii*, and the hybrids, *S. Boydii*, *S. ovata*, *S. Sadleri*, *S. Moorei*, and *S. Grahmi* is on the rockery. *S. Bockii* blooms in October and November, thus reversing the season.

WEeping WILLOWS.

The Weeping Willow is *Salix babylonica*, a native of Western China, where it was seen by Mr. E. H. WILSON in a wild state, and not on the Euphrates (waters of Babylon) as is usually believed. It has been introduced to almost all temperate parts of the world and reached our shores, according to record, in 1730. Several forms have been described by N. J. ANDERSSON, but he stated that Napoleon's Willow (*S. Napoleonis* and *S. Napoleona* of gardens) was the most frequently cultivated everywhere. The beauty of it depends entirely upon the long, slender twigs and branches, clothed with narrow leaves, and drooping to the ground or to the water. As in the case of all other Weeping Willows, the margins of rivers, lakes and ponds are the best places for it. The tree is not very hardy, but is liable to suffer from late frosts in March, when it comes into leaf, judging by a tree at Wisley and others by the lake in St. James's Park, London.

Many of the vigorous old trees on the banks of the Thames, on Mitcham Common, etc., are *S. sepulchralis* (*S. alba* × *babylonica*), seeing that the leaves are covered more or less with silky hairs and have a somewhat hoary appearance. The trees are liable to be attacked by the mite, *Eriophyes triradiatus*, which produces large galls that turn black and ugly in winter, as may be seen on trees in St. James's Park. Other planted weeping trees that occur by ponds and elsewhere have large, perfectly smooth, green leaves, and are *Salix blanda* (*S. babylonica* × *fragilis*). Synonyms of this or closely allied forms differing in the size of the leaves are *S. elegantissima* and *S. pendulina* of WENDEROTH, or the latter would seem to be the oldest name (1831) for *S. blanda*, published in 1863. The most beautiful of all these weeping trees is *S. alba vitellina pendula*, with long, pendent, golden-yellow branches, reaching to the ground. It was first listed in SPÄTH's catalogue in 1888, but is often grown in gardens and erroneously catalogued as *S. babylonica ramulis aureis*. Notwithstanding its name, it is evidently the hybrid *S. alba vitellina* × *babylonica*: the long, pendent, slender branches and the bracteoles of the catkins are those of *S. babylonica*. The tree is sometimes in full bloom in February, and the catkins may be nearly all male, nearly all female, or irregularly mixed—another sign of hybridity.

The typical, narrow-leaved *S. purpurea* is almost always grafted or budded on an erect stem of some other species, and is erroneously

known in gardens and lists as *S. americana pendula*, whereas it is an Old World species. The Kilmarnock Willow (*S. caprea pendula*) is nearly always grafted on a stock, and makes one of the neatest weepers, the branches hanging down on all sides, as compactly as *Sophora japonica pendula*. *Salix repens argentea* is sometimes grafted on a stem about 3 feet high, and makes a small weeping standard. It was at one time sold under the names of *S. sericea pendula* and *S. Woolseyana*.

All Willows can be propagated by means of cuttings, inserted outdoors, preferably in autumn after the fall of the leaf, but *S. alba*, its varieties and some others will root in spring, if inserted before the buds expand. Several of the Weeping Willows do not produce a good, straight trunk, and the best plan with them is to graft or bud them on a stem of some other species, or the ordinary type from which the weeper has arisen. It does not seem to matter what Willow stock is used, provided it stands upright and can carry a good head. I have seen stocks in use of *S. Caprea*, *S. daphnoides*, and *S. Caprea* × *viminalis*.

HUNTING SEMPERVIVUMS.

By R. LLOYD PRAEGER, D.Sc.

[Read Oct. 18, 1927; Dr. A. W. HILL, F.R.S., in the Chair.]

SEMPERVIVUMS or Houseleeks are familiar to you all, and I have no doubt a good many of you have rejoiced or suffered over these attractive but perplexing plants: attractive because of their interesting form and the delightful way in which they will fill a chink of rock-work, or grow in an old wall, and perplexing on account of the almost complete impossibility of naming them correctly. I too have suffered in the same way, and I think it is this fellow-feeling more than anything else that brings me before you to-day.

It is five years now since the Council of this Society invited me to prepare an illustrated account of the Sempervivums for publication. I have been at it more or less ever since, and I think that some account of the adventures and misadventures that anyone who tackles this group, of necessity encounters, may be of interest to you.

I have chosen a popular title for this lecture, namely "Hunting Sempervivums," because I do not want you to think that I am going to attempt to classify them, and to give you all the points by which they may be distinguished one from another. That would be exceedingly dull, even if I were fully competent to do it. For a similar reason I have here no collection of these plants to show you, because I felt I might be tempted to go into detail which would be quite unfruitful on an occasion like this. But in the Hall below you will find a good collection of the Canarian species, kindly sent up by the Director of Kew to illustrate my remarks.

I should like to say at once that as regards the Sempervivums there is no golden rule, no short cut by which you can hope to name them easily. They are inherently a difficult group, and unless you are prepared to take some trouble over them and study their more minute characteristics, you can never hope to get your plants correctly named. This arises not so much from the nature of the species themselves, because they are fairly easily identified, as from the fact that one or two of the species are exceedingly variable, so much so that they have received a very large number of names; there is also a considerable amount of crossing between the different sorts, which makes them distinctly difficult.

First of all, What is a Sempervivum? As you know, Sempervivum is one of the larger genera of the Order Crassulaceae, to which the Crassulas and Sedums, for instance, belong. The Crassulaceae are not a satisfactory group, because the plants do not quite seem to have made up their minds what they are aiming at; they in many cases

have not attained stability, and vary in all sorts of ways. They have not, for instance, made up their minds how many petals they want to have, and in many species the number of petals is quite variable; they have not made up their minds about the shape of their leaves; and these things make it difficult to define the various genera and the various species. The *Sempervivums*, along with the *Sedums*, differ from all the other *Crassulaceae* with regard to the petals, which are separate to the base; between *Sedum* and *Sempervivum* there is not so much difference; the chief character is that *Sedum* has mostly five petals and *Sempervivum* anything from six to thirty. That, you will realize, is an unsatisfactory character on which to found a genus.

Geographically, the *Sempervivums* are essentially a South European and North African group; they are absent from northern Europe and the southern two-thirds of Africa. They naturally divide themselves into two very distinct sections: one European, running across the mountains from the Pyrenees to the Caucasus, with a single outlying species in the Great Atlas of Africa; the other concentrated in the Canary Islands, with a few outlying species on the other Atlantic islands and on the African mainland. There are a few *Sempervivum*-like plants on the Himalayas, but most of those have been relegated to the genus *Sedum* with very good reason. Two others have recently been placed by Dr. STAFF in a separate genus, *Sempervivella*. *Sempervivella alba* is a very pretty plant on the rock garden, coming halfway between *Sempervivum* and *Cotyledon*.

As regards their history, *Sempervivums* being attractive and remarkable plants, have in consequence been known and recognized from a very early period. DIOSCORIDES in the first century refers to two species, and those two are illustrated in that interesting and remarkable sixth-century copy of his "*Materia Medica*," known as "*Codex Vindobonensis*"; these two species are *Sempervivum arborescens*, an African plant which has long been known along the Mediterranean, although its native home has until quite lately been in doubt, and *Sempervivum tectorum*, of the European group. From classical times on until the seventeenth century not much progress was made; the Dark Ages intervened, but a few additional European *Sempervivums* are mentioned by the herbalists of the sixteenth and seventeenth centuries, and two Canarian species also appear in the books. LINNÆUS, when he compiled his "*Species Plantarum*" in 1753, described four hardy species, all from the European Alps, namely *tectorum*, *montanum*, *arachnoideum*, and *globiferum*; he also included two of the African group, namely *arborescens* and *canariense*.

Towards the middle of the nineteenth century mountaineering became fashionable. Before that the mountains were thought by the majority of people to be terrible places to which no one went if he could keep away. When mountaineering became the vogue, all mountain plants were intensively studied, and the *Sempervivums* of European origin received a great deal of attention. A large number of species made their appearance in literature; dozen after dozen were

described, until by the end of the century the group appeared a very large one ; if you look in the " Index Kewensis," you will find over two hundred species of hardy *Sempervivums* listed ; the tender *Sempervivums*, mostly from the Canary Islands, were also worked at, and at least one hundred species are listed in the same work.

The recent state of the group is one of appalling confusion, whether we take into account the plants of rock gardens or of greenhouses. No one knows what his plants are, whether they are true species, or varieties or hybrids ; every name is looked on with suspicion, and very properly, as you will see later. That was the condition of affairs when I was asked by this Society to look into these plants. I innocently thought if one got together a really good collection of the cultivated forms, one should be able to worry out the whole thing by those means. I issued an appeal to the Botanic Gardens and private growers, and got together a very large collection, numbering about 2,000 pots of hardy *Sempervivums* and about 350 of tender *Sempervivums*, and grew them all and studied them for several years. That method of approach proved completely futile. It was impossible from the cultivated plants to make out what were the pure species, in spite of the descriptions that one found in books, and what the names of the other plants were, whether varieties or hybrids.

It was rather hard at first to account for this very serious confusion, which is much worse than occurs in the majority of cultivated genera, but the reason was after all not very far to seek. Most Botanic Gardens issue annually a Seed List, and although *Sempervivums* are exceedingly easily grown from offsets—you may put a bit in your pocket and keep it there for a month ; it won't do it the least harm—unfortunately, for the sake of uniformity the Botanic Gardens include *Sempervivum* in their lists, and send out seeds. These plants hybridize extremely easily, and practically none of that seed is pure. You can try the experiment for yourself ; sow the seed of any *Sempervivum* in your garden, and, except in a few cases, you will get as offspring what will correspond to a dozen quite good species according to the usual standard.

Much of this confusion, however, centres round one species, namely, *Sempervivum tectorum*. This variable plant is abundantly distributed along the whole chain of the European Alps, and a large number of different forms have been brought home at one time and another ; it is these forms and their crosses which cause much of the trouble. *S. tectorum* and its forms are responsible for a very great deal of the confusion in the garden, hybridization is responsible for the greater portion of the confusion which you find in books. The large number of species on record, about 200 hardy and 100 tender, gives an altogether false idea of the actual size of the genus. There are not more than 25 hardy *Sempervivums* which deserve to be called species out of the 200 mentioned, and out of the 100 tender, there are not more than about 60 good species ; the rest are all mere forms or else hybrids. To show you the present state of nomenclature of the *Sempervivums* in gardens :

I got two very good collections made by men who had worked for many years collecting hardy garden *Sempervivums*; each collection contained about 100 so-called species, each one labelled with a different specific name. Out of those hundred, one half were forms of *S. tectorum*, and the other half were nearly all hybrids; there were not more than ten species altogether in either of those collections. With the tender *Sempervivums* there is less variation and more hybridization; about half of the tender *Sempervivums* as represented in the best European Botanic Gardens are garden hybrids of unknown parentage.

My collection, then, proved the futility of attempting to name the *Sempervivums* from the material to be obtained in gardens. It was clearly necessary to begin at the other end, to go to the homes of the *Sempervivums* and collect them and study them on the ground, and bring home the pure species and grow them. That was rather an undertaking, because as I have said they are widely scattered, ranging from the Pyrenees to the Caucasus and spread over the Atlantic islands. But a start was made with Switzerland, whence about 100 species have been collected and described. Here I had the good fortune to be one of an international party of botanists who visited that country five years ago, and who were conducted over the best ground by Swiss botanists. This was very advantageous for anyone working at any group, as one got many opinions about the various plants; a considerable collection of Swiss *Sempervivums*, mainly hybrids, was made. As a matter of fact those 100 so-called species of *Sempervivum* boil down to five—five *Sempervivum* species in the whole of Switzerland; that is all, everything else is varieties or hybrids. These species are *tectorum*, which you know already; *montanum*, *arachnoideum* (all red-flowered), with *grandiflorum* and *Wulfenii* (yellow-flowered).

As to how these 100 "species" originated, you get a very good idea if you go to Switzerland and observe the *Sempervivums*. Go up towards the Bernina Pass and turn into that valley known as the Heuthal. You will find four species growing there, and you can get every kind of hybrid between these, and secondary and tertiary hybrids; you can get a complete series from one species to another, evidently the results of continual hybridization. Switzerland is an ideal country for this kind of work on account of the innumerable hotels, roads, railways and everything else that makes botanizing easy. It is a simple task to get a very good idea of the Swiss flora.

The next best centre for *Sempervivums* in Europe is the Balkan region, but there the problem is different. First of all the area that has to be covered is very wide, there are very few railways, very few roads, practically no inns, and the species of *Sempervivum* are very scattered. You never get several growing together in one valley as you do in the Alps; you have one species here and another fifty miles away; so the problem of collecting specimens in a limited time is not a simple one. In visiting this region I was again very fortunate. Mr. TURRILL of Kew Gardens was going out there to work with two excellent Bulgarian botanists and to collect, and I was able to join

them, and in that way studied the Bulgarian flora under favourable circumstances. On the way out I stopped at Budapest where, under Dr. DEGEN's guidance, I saw some species *in situ*, and at Belgrad a good set of Macedonian *Sempervivums* collected by Prof. KASANIN, who is working at the flora of that region. At Sofia, Professor STOJANOFF and Mr. STEFANOFF had collected quite a number of *Sempervivums* from different parts of Bulgaria, and King BORIS, who is a good botanist and has devoted a good deal of attention to these plants, had quite a collection of interesting houseleeks growing in the gardens of several of his palaces. All of these were kindly placed at my disposal. The two most interesting parts of Bulgaria are the Rhodope region and the Rilo region, the latter containing the highest mountains in the Balkan area. I will tell you a little about one of our trips there, to give you some idea of what Balkan botanizing is like. We started from Sofia by the night train and went south to Philippopolis; the next day we spent motoring over seventy miles of the dustiest roads I have ever traversed, through glorious scenery. We stopped next night at a village and then took mules and rode thirty miles through the mountains; that was three days' work. The travelling would have been all right if one could have slept at night, but unfortunately when you get to Bulgaria the insect fauna is so varied and abundant that sleep becomes somewhat of a problem, so when we got to the lead-mine of M. SAVOFF, who kindly placed a half-finished wooden hut at our disposal, having travelled three days and been without sleep for two nights, we were hardly ready to start mountain climbing. However, after a day's rambling, we walked down a long valley to a village still further south, and there, with the assistance of the army people, who let us have some ponies, we started south again, had a very long day's riding, and finally got to the Greek frontier to the high mountain of Karlac, which had never been explored botanically. There we got some extremely interesting plants, which I cannot deal with here. We slept on the top of the mountain in a military hut, for all along that mountain frontier Greeks and Bulgars snarl at each other from alternate military posts ready to open fire at any time. We did some further botanizing and got back to Sofia after ten days' very hard travelling, but having got a good collection of plants. What the Balkan *Sempervivum* flora amounts to is this. There are altogether only about six good species. Owing to their sparse distribution, they do not get chances of hybridizing like the European ones, and the awkward question of hybridity hardly arises at all; but on the other hand the descriptions have been rather badly drawn up, and the difficulty is to correlate these quite distinct-looking plants with the descriptions; I found it hard to fix the correct names to my plants. We also paid a visit to the Rilo Mountains; this is a magnificent range, and one of the most interesting things I have seen in the way of mountains, because it is absolutely virgin ground; there are miles and miles of forests from which no tree has ever been felled, places where man has hardly ever entered, inhabited by wolves and

wild boars and all kinds of wild creatures. I had no idea that anywhere in Europe such enormous trees existed in such primitive conditions and among such grand scenery. Here we had to work with the assistance of ponies over the roughest ground that ponies are ever asked to undertake, through waterfalls and rushing torrents, over great screes of boulders—extraordinarily difficult ground. Finally, having reached a point 7,000 feet above sea-level with wide stretches of grass and mountain pine and snow, we went away down a valley on the opposite side through equally rough ground to the great Rilo Monastery, where we botanized for several days. I was fortunate in the way of *Sempervivums*, and my companions in regard to the other plants they got; the best plant was a new species of *Anthemis*, with a beautiful flame-coloured flower, of which some account has been published in the *Gardeners' Chronicle*, and of which more will be heard presently.

So in this way Switzerland and the Balkans have been pretty well studied from the point of view of their *Sempervivums*. There still remain the Southern Alps and North Italy. In that region there are several species I should like to see, and a visit will have to be paid there before one can feel that the group has been properly sampled. Then there is a large area stretching between the Alps and Bulgaria—Carinthia and all that region. When these places have been visited, when the plants have been grown and have flowered—sometimes it is difficult to get the plants to bloom—it should be possible to write an account of the hardy *Sempervivums* which will make it simple to name at least the species; but I do not think anyone will ever achieve the naming of most of the material that is at present in cultivation in gardens. From a botanical point of view it should be all thrown out, and we should begin afresh with newly collected named plants, which should be distributed by offsets and not by seed. Then we should have good species in our gardens, instead of this extraordinary rabble of hybrids and slight variations.

I said I would not go into details about the naming of these plants, but I will just give you a few hints as regards the hardy *Sempervivums*. First of all they are divided into two very distinct sections: one section has open, flat flowers with about seven to nine or ten petals, red or yellow; the other group has narrow flowers with the petals erect, only six in number, and yellow. These two groups are quite easy to distinguish from each other, provided you can get flowers, but sometimes they will not flower for you. The first is known as *Eu-Sempervivum*, and the other *Jovisbarba*. The most difficult to name are those that look like *tectorum*. This plant forms a large rosette of leaves that are quite smooth except on the margin; there are no hairs except on the edge of the leaf. There are two other species which closely resemble *tectorum* when not in flower: one is *S. Wulfenii*, which lacks the purple tip to the leaf, and the other is *S. Heuffelii*—both of these have yellow, not red flowers. If you can only get your plants to flower, there is no doubt about which you are dealing with. But you can distinguish *Heuffelii* from *tectorum* when not in flower by a

urious character. In *tectorum* the plant propagates itself by means of offsets on fairly long stems, which eventually root and become separate plants ; but in *Heuffelii* the rosette divides in the middle into two or more equal rosettes ; in consequence you never get small rosettes, they are always about the same size because they all originated at the same time.

Then there is the *arachnoideum* group, the cobweb houseleeks. You all know that pretty little plant with the cobwebby hairs between the leaf-tips ; this is a very variable species indeed, but there is no other species that has such a network of hairs. When you find a plant with a leaf-tip bearing a group of woolly hairs in most cases spreading horizontally, but not reaching the tips of adjoining leaves, you can be sure that it is a hybrid of *arachnoideum*.

Then there is the *montanum* group, small dark green hairy plants with purple flowers—purple rather than red—and with long offsets ; this group does not give much trouble.

Among the yellow-flowered group of Eu-Sempervivums there are *grandiflorum*, *Pittonii*, *ruthenicum*, and *ciliolum*. They are easily enough distinguished by characters which you will find in any good book.

Lastly there is the *Jovisbarba* section, the largest of which, *S. Heuffelii*, has been referred to already. They are mostly small plants with little green rosettes and all have yellow flowers with six upright petals. The other species of this group are *hirtum*, *soboliferum*, *Allionii*, and *arenarium*.

With the addition of one or two rare species, that exhausts the list of hardy Sempervivums. That is all I can afford to say at present about the group ; when I get my report published you will be able to see illustrations of all the species, which will show much more clearly than I can say in a few minutes, what the differences are.

To turn now to the African group, just the same confusion exists there. They are hopelessly confused and misnamed, and it is impossible to identify them from the material you find in collections. Geographically they are almost confined to the Canary Islands. Out of a group of about 60 species, 50 are found only in this one small island-group, a very peculiar thing. There are one or two species on the Cape Verde Islands, five on Madeira, one on the Azores, one in Morocco and one in Abyssinia ; all the rest are in the Canaries. The Canary Islands form a very interesting and beautiful group of islands ; their position, as you know, is about 1,600 miles S.S.W. of Liverpool, well south of the entrance to the Mediterranean and about 100 miles off the African coast. In size the islands vary : the largest is about 60 miles long. Their height is very considerable, Teneriffe rising to 12,000 feet, and two others to 6,000 and 7,000 feet respectively. Owing to the nature of the rock the ground is generally difficult to traverse ; the islands are entirely volcanic, a very old group in which volcanic activity has persisted to the present day, for though there is no active volcano at the moment, only about 15 years ago there was a very

creditable little outburst, a fine display of fireworks with a lava flow about a mile long ; at any time there may be a fresh outbreak. The effect of weathering on these great masses of rather soft lavas, ashes and cinders, lying on very steep slopes, has been that the rain, which is often very heavy in winter, has cut into the slopes in an amazing way. You see a little village about a couple of miles off and you think you will stroll over there before lunch, but when you set out you may find three gorges each a thousand feet deep between you and it. The islands are seamed with parallel gorges, and it is almost impossible to work horizontally, save where one of the few motor roads makes things easy ; it is much easier to work vertically, because there you can take to a ridge and ascend with comparative ease.

Another effect of the nature of the ground is that the greater portion of the flora grows on cliffs, and you have to be prepared to do a great deal of cliff collecting. One thing that is required is an implement with which to get your plants down off the cliffs, or to pull them up from below. I got a number of bamboo poles made, each with screwed ends to fasten into each other, and a knife-edged hook at the end ; with this one could reach to plants twenty feet up the cliff or let the pole down over a ledge and pull a plant up. The *Sempervivums* being comparatively succulent, the edge of the hook was sharp enough to cut through the stem, so that one could secure one's plant, though mostly without a root. In the Canaries there is, at sea level, a very warm climate, and bananas especially are cultivated wherever water can be brought down from the hills ; but a few thousands of feet up you get a temperate climate with beautiful woods (where they have not been cut away), and above that, what looks very like the alpine zone, as you find it in the Lake District or in Scotland, covered with what resembles a grassy sward, but when you get there you find it is almost entirely composed of annuals—little clovers and plants of that kind. These plants arise from seed with the autumn rains, flower in early spring and by the end of May they are all dead again. In the lower zones, the plants adopt the principle of going to sleep for the summer. Instead of producing their leaves in spring and shedding them in the autumn as so many of our trees and shrubs do, they produce them in the autumn, wear them through the mild wet winter, and drop them in the spring, and remain during the summer apparently lifeless, to burst into leaf again in the autumn. The most remarkable feature of the Canarian flora is the amount of endemism that prevails, and the very limited distribution of the plants. Of sixty species of *Sempervivum* found on the Canary Islands, not one occurs anywhere else. Out of these sixty, forty grow in one island only. It is remarkable how these plants have been evolved in this extraordinary way with such a restricted range, some with only a single station.

As a result of their peculiar and limited distribution, a great deal of travelling is required in order to collect them ; one has to visit one valley for one species and another valley 20 miles away across extremely rough ground for another, and so on.

As regards the history of the Canarian Sempervivums, I need say little. *S. arboreum*, long believed to be a Canarian plant, was known to the early Greek botanists, as I told you, because it has long been found all round the Mediterranean coasts, though nowhere in a native situation. I read a paper only a couple of years ago arguing in favour of its Mediterranean home, but French botanists have lately discovered it undoubtedly native in Morocco, and I think the question of its home is settled at last.

S. tabulaeforme, a most remarkable Sempervivum, one of the most remarkable plants in the world, is another with a long history. To see this species plastering the sides of cliffs of Teneriffe is really an extraordinary sight. This plant was known as early as 1696; but later it got hopelessly mixed up; it has had at least six different names, and it is only quite recently that the tangle has got straightened out. During the nineteenth century the flora of the islands has been steadily worked out by many botanists.

We went to the Canary Islands in 1924 and spent three months there. We visited all seven islands, and collected the great majority of the known Sempervivums, and had also the good fortune to find five new species. One of them, which I have named *S. nobile*, I should have liked very much to have shown you to-day, but unfortunately since I came to London I found that the plant which I had given to my friend, Dr. HILL, has died, so it is not among the collection in the Hall. I shall be able to replace it. It is a very remarkable plant, the most massive of all the many succulents which occur in the Canaries. Four collected leaves turned the scale at three pounds.

As regards hybridization among the Canarian Sempervivums, this was believed to be a very rare occurrence; only one hybrid was definitely on record. In 1924 I got no less than six plants that were undoubtedly hybrids, which led me to believe that hybridization might account for a good deal of the confusion among the Canarian plants of this group. That point as well as others needed further investigation, so we went back this year and spent four months on the islands. The results were rather surprising, for we found no fewer than forty new hybrids. In fact this group crosses much in the same way that our British and European roses or willows do. There is no group in the whole Canarian flora which hybridizes to anything like the same extent. Almost every species crosses with every other to which it has access, and the hybrids are interesting because their parents are often utterly different in appearance. A few of the Canarian species are small, most of the others are quite large, and the hybrids between the two are often curious. It was quite easy to identify the hybrids for the following reason: in any one valley you mostly get only three or four species, and these are usually plants of quite different appearance. While a number of Canarian Sempervivums resemble each other closely, these similar plants mostly occur distributed on different islands. In one island you seldom get two species which can possibly be mistaken for each other; so when you find a plant which possesses a number of

characters of two others which are present, and which shows a kind of compromise in other respects, you can mostly name its parents with certainty. I was able to name our hybrids without the smallest trouble, and we have brought them all home and are growing them. Of some sixty *Sempervivums* on the Canary Islands which I believe to be good species, I found all but seven ; these seven are plants that have only once been discovered in one place, mostly a long time ago ; they have never been refound, and I think the chances are that one or two of these are hybrids, exceedingly rare or possibly extinct.

The Canarian *Sempervivums* are divisible into four distinct groups, all of which are represented in the collection in the Hall. The largest section is *Aeonium*, numbering thirty species ; some of these are only 6 inches high, but most of them form fine handsome shrubs ; I have seen stems of *A. undulatum* 10 feet long. The section *Aichryson* is less interesting, consisting mostly of annual species. Then there are the *Greenovias*, interesting plants, mostly almost stemless, easily distinguished from the others by having twenty or thirty petals instead of less than a dozen. Finally there are the little *Monanthes*, some of which form the most beautiful little rosettes imaginable ; they are most dainty plants, growing in rock crevices.

All of the species which we collected and brought home are being sent to a number of the leading Botanic Gardens throughout Europe, and one may hope that as a consequence the confusion will become less. I hope also to distribute sets of the hardy *Sempervivums* when I have got a little further.

That is the state of my work on *Sempervivums* at the present time. One or two of the species I am afraid I cannot hope to see alive. There are two fine species on the Cape Verde Islands ; I propose to go there if I can. There is one very interesting *Sempervivum* in Abyssinia, but I am afraid that is rather far to go for the sake of a single species.

THE PRUNING OF HARDY FRUIT TREES.

By C. R. FIELDER, V.M.H.

[Read November 15, 1927; Mr. F. H. CHAPMAN in the Chair.]

THE pruning of the fruit trees is one of the most interesting operations of the garden, and it is also one of the most important; for by careful pruning it is possible to control and direct the development of young trees and, within the limits of each variety and kind, assist them to produce satisfactory crops of good fruit.

The necessity of pruning, however, is not confined to young trees only; for often there may be seen trees which have reached their full size, and which would be greatly benefited by a careful pruning. Their heads are crowded with branches, and having a canopy of leafage through which but little sun can penetrate, the fruit is usually small and inferior in quality, and a judicious thinning out of the heads of the trees would result in the production of larger and better fruit.

Trees which are obviously worn out should be grubbed and burned for the well-being of the remainder; yet how often one may see orchards containing trees which have long been practically useless.

Some, of course, have a strong feeling against either lopping or felling a tree of any kind; but in the case of fruit trees that feeling might be set aside, at least so far as to cut out all dead wood.

Therefore, for those who wish to make the best of their fruit trees there is, in the matter of pruning only, generally something of interest to do, something worth doing, whether their trees be many or few, young or old.

The chief objects of pruning are :

To assist the tree to attain the desired form.

To encourage the formation of fruiting wood.

To improve the flavour, quality, and size of the fruit by admitting air and sunlight to all parts of the tree.

To remove dead or diseased wood, and by root pruning to bring unfruitful strong-growing trees into a fruit-bearing condition.

Apples and Pears are chiefly grown in the form of Standards and Half-standards, Bush, Cordon, and Espalier trained trees; and though the training of some of these forms differs, the method of pruning is much the same.

The fruit is chiefly borne on spurs. A spur may either consist of a single short, stout shoot, or may be comprised of several such, resulting from the cutting back of an ordinary shoot; and this artificial promotion of fruiting spurs is one of the chief objects of summer and winter pruning. Fruiting spurs are also produced naturally by the trees when they arrive at the fruiting stage.

Amateurs, when buying fruit trees, generally select those which are more or less developed. This is wise, for such trees will have already undergone one or more years of pruning by skilled men.

The young trees having been planted, the necessary pruning should be done by the end of the same winter. This initial pruning should not be deferred until the following winter; for this may result in the production of fruit buds at the expense of the growth of the trees, or, whatever growth may be made, is likely to be in a bad position in regard to the future formation of the trees.

Taking Bush and Standard trees which have been pruned once in the nursery and are two or three years old, these may contain from three to six shoots, which will be the foundation of the future tree. They should be cut back to about half their length, making the cut immediately above a bud which is so situated that the growth of the branch may be continued in the desired direction.

The heads should be kept open in the centre; therefore the bud pruned to is generally an outside one (as it is called), viz. one situated on that side of the shoot farthest from the centre of the tree. The growth produced from that bud will grow outwards, more or less, according to the natural habit of the particular variety. Any tendency of a branch to become too pendulous, or to grow inwards, or sideways towards an adjoining branch, should be corrected by pruning to a bud pointing in the direction in which the branch is desired to grow.

Thus, by careful selection of the buds when pruning, the open centre of the tree may be maintained, and the branches kept at the required distance apart, which may be roughly stated as 15 to 18 inches when they have grown to a length of 4 feet.

Older trees which have been pruned twice or more will of course be larger; the Standard, Bush, Espalier, and the Cordon will each have assumed a definite form, and some fruiting spurs will have been produced on the older parts of the branches.

As with younger trees, any pruning required should be done during the winter of planting. The young shoot (called the leading shoot) at the end of each main branch should be cut back to leave 12 to 15 inches. If the length is less than this it may be left unpruned, unless the bud at the tip of it is a fruit bud, in which case the shoot must be cut back to a wood bud; for, if fruiting is permitted on the end of a leader, the further growth of the branch will be seriously retarded.

All side shoots (called laterals) should be cut back to two or three buds to form fruiting spurs; and the same with growth shoots coming from previously formed spurs. Short, stout shoots, however, should not be pruned, as these are prospective fruiting spurs.

Spur pruning of Standard trees may be discontinued when the head has been developed, and the pruning then confined to thinning out the branches sufficiently to keep the head of the tree open, cutting out branches that grow inwards and any which grow across and chafe other branches, and all dead wood.

Practice is needed to be able to know a fruit bud from a wood or growth bud, especially early in the winter. Fruit buds are larger and rounder than wood buds; this becomes more pronounced at the approach of spring, and the inexperienced might defer the pruning until then.

The fruit buds of Apples and Pears are usually found at the points of short shoots or spurs as already stated. Some varieties, however, will not readily submit to spur pruning, but produce their fruit buds at the points of the current season's shoots, including 'Lady Sudeley,' 'Irish Peach,' 'Golden Noble,' 'Cornish Gilliflower,' and, in a lesser degree, 'Bramley's Seedling.' Therefore, after trees of these varieties have become sufficiently developed, the pruning should be confined to thinning out the shoots in winter if too crowded, all others being left their full length.

The branches of Espalier trees are trained horizontally, and when received from the nursery there will be one or more tiers of branches, and a central upright shoot. The tiers should be about 1 foot apart, and after planting, the leading shoot on the horizontal branches, if longer than 15 inches, must be cut back to that length. The upright central shoot must be shortened to 12 inches, in order to provide three shoots, the uppermost of which will continue the extension of the stem; while the other two must be tied down to the trellis, one on each side of the stem, to start the next tier of branches; and so on each year, until the usual four or five tiers have been formed. The side shoots should be spurred back, as already described.

Cordon trees, whether upright or oblique, are pruned in the same way as a branch of a Bush or Espalier. In this form of tree the growth must necessarily be restricted, with the result that sometimes the wood becomes too strong to be fruitful. This may be corrected by root pruning, which will be described later.

The Fan-trained form is seldom employed for the Apple, but is sometimes used for choice varieties of Pear. The name explains the form. The pruning of the branches is the same as that for other forms of the Apple and Pear.

So far, only winter pruning has been alluded to. At midsummer, or a little later, according to season and locality, the summer pruning should be undertaken. All side shoots, except short, stout ones, and any that may be required to form additional branches, should be cut back to six leaves, to be further cut back in the winter to three buds, to form fruiting spurs. The leading shoots at the end of the branches should not be cut back at the summer pruning.

For the Plum, the best form of tree is the Standard, the Fan-trained, and the Bush. In forming the young tree, the method of pruning is the same as for the Apple and Pear, except that the leading shoots do not require to be cut back so close as advised for those trees.

The fruit is borne on short, thin shoots proceeding from spurs, and also along the sides of fairly strong shoots of two or three years'

growth, if well ripened. The fertility of Fan-trained trees should be maintained by training strong young shoots to replace old exhausted branches, which may then be cut out.

Standard Plums require very little pruning after the heads are formed, and if the branches are allowed to extend freely, fruit bearing soon follows. The only pruning then required is to thin out the heads if they become crowded ; to keep the centres free from sappy growth ; and to maintain a well-balanced head by cutting back the points of individual branches which are outgrowing the rest.

The Bush is a convenient type where space is limited, as, for instance, by the pathside in the vegetable garden. In this, and in similar positions, where the growth of the tree must be restricted, an occasional root pruning is usually necessary to prevent too strong and unfruitful growth. The lateral shoots and those growing from spurs should be summer pruned to about six leaves ; and when winter pruning these shoots, one wood bud, at least, must be left above the uppermost fruit bud, otherwise the shoot will die back.

The Fan-trained Plum is an excellent form for planting against a wall or a trellis, as the flowers may then be protected from frost, and the fruit preserved from birds by the use of protective covering.

After having been planted, the shoots of the young tree should be shortened by about one-third. At the summer pruning all side shoots more than 6 inches long should be pinched off at the sixth leaf. A second stopping may be given a month later, and the shoots further cut back in the winter as for Bush trees.

As sap flows more readily in an upward than in a lateral direction, the lateral branches of Fan-trained fruit trees should be well developed before the more upright branches of the centre are allowed to form, otherwise the latter may become unduly strong at the expense of the lower lateral branches.

For Peaches the Fan-trained tree is in general use. The advantage of this type of tree lies in the effective manner in which the wall space may be covered, the ease with which the trees may be trained, and the ready way in which defective branches may be replaced.

The Peach fruits on the young shoots of the previous season's growth.

Supposing that trees two years old have been planted, these will each contain from four to six young shoots or branches, which should be cut back to half their length. During the ensuing spring numerous little shoots will be produced, one of which will be required to continue the extension of each branch, and one or two more to form additional branches, the remainder being pulled off when about an inch in length. This is called disbudding.

By the autumn twelve or more branches will have been formed. During the winter the leaders must be cut back to about 15 inches, and if the growth has been well ripened some fruit should be produced on these shoots. The process of disbudding, selecting young fruiting shoots, and cutting out old fruited wood is continued each year, and

the extension of the branches is carried on until the tree has filled the allotted space.

The Fan-trained tree is also best for the Apricot. The method of pruning to form the young tree is similar to that recommended for the Peach. Likewise it is advisable that the branches of the lower half of the tree be well started before filling in the centre, and should a young tree be planted having a central shoot, the latter ought to be cut out and the remaining shoots trained at an angle, on each side of the stem, leaving the centre open for the time being.

In June summer pruning is necessary. All shoots growing outwards must be cut out, and the side shoots cut back to four or five leaves, and further cut back in winter to three buds.

In private gardens the Cherry is generally grown in the Fan-trained form, chiefly on account of the need of protecting the fruit from birds.

With the exception of Morello varieties, the fruit is borne on spurs, and these are produced so freely that the leaders of the young tree, if less than 3 feet in length, need not be shortened when planted.

As far as possible all subsequent pruning should be done while the shoots are unripe, the pruning of matured wood being liable to cause gummosis, a disease which causes much injury. For this reason the pruning ought to be confined almost entirely to pinching back the young growing shoots. Therefore, early in the summer, after such shoots as may be required to form additional main branches have been selected, the remainder must be pinched back to 3 or 4 inches, and further cut back to three buds at the end of September.

Thus there need be little or no pruning of ripened wood.

Additional main branches should be started when the original ones have grown 18 inches apart.

The fruit of Morello Cherries is produced almost entirely on the shoots of the previous year's growth, and, accordingly, a method of pruning different from that for dessert Cherries is employed. The fruit buds are so freely produced that sometimes the only growth bud is that at the tip of each shoot. Therefore when planting a Morello the shoots should not be cut back, otherwise they will die back to the next growth bud, and thereby delay the extension of the branches.

As the trees develop more shoots may be produced than there is room for, in which case, directly the fruit is gathered, the crowding should be reduced by cutting out shoots which have recently borne fruit. This will make room to tie in, not less than 4 inches apart, the young shoots for the following year's fruiting.

The Fig, also, is best in the Fan-trained shape, although in the warmer districts bordering the South Coast, it may also be successfully grown as a Standard or a Bush, in favourable seasons. In this country Figs planted in the open air produce their ripe fruit on the upper part of well-ripened shoots of the previous year's growth, for, although fruit is often formed on shoots of the *current* season, these do not ripen, but shrivel and fall by the following spring.

Thus, it is only those buds which remain dormant through the

winter near the end of the shoots which, under favourable conditions, produce ripe fruit the following summer or autumn. Therefore the ends of the fruiting shoots should on no account be cut off.

Suckers from below the ground-level must be kept closely cut out, as the growth from these becomes strong and unfruitful.

Little summer pruning is required, except pinching back shoots that are too strong, and those for which there is no room. In the winter these should be further cut back to one bud.

If planted in too rich a soil the trees are liable to make too strong growth, especially when there is not sufficient space to allow free extension of the branches. Root pruning will check this, and lead to the production of those short-jointed and well-ripened shoots which are essential to fruitfulness. The same result may be obtained by restricting the roots to a very narrow border.

The Gooseberry is commonly grown as a Bush, but in the Fan-trained and in the Cordon form, with from one to four branches, it is often planted against an Espalier. The fruit is produced on the young wood and on spurs. The plants should have a bare stem of 6 inches or more in height, to avoid the growth of suckers; and supposing the heads to contain three or four shoots, these should be cut back to 9 inches. The following summer one or two shoots should be selected on each original shoot, to form the main branches of the bush, all other side shoots being cut back to five or six leaves. In the winter they should be further cut back to half an inch to form spurs, and at the same time the leaders should be slightly shortened.

The future summer pruning will then consist of thinning out the young shoots to permit the fruit to be gathered easily, and in winter merely taking off the unripened tips, spurring back the side shoots, and cutting out any worn-out branch.

When grown as Cordons and Fan-trained trees the fruit is borne on spurs. Therefore all side shoots are cut back to four or five leaves in midsummer; and in the winter they must be pruned back to three buds, at the same time reducing the leading shoots to 9 inches in length.

The Red Currant may be grown in various forms, but the Bush is the one most often adopted. It should have a clear stem of 6 inches or more.

Starting with plants containing three or four shoots, these should be cut back to 6 inches. At the end of June well-placed shoots must be chosen to form the main branches, the remainder being cut back to form spurs.

The fully grown Bush should have from eight to ten main branches, which should be wide apart and the centre open, in order that sun and air may freely reach all parts. With this in view the side shoots should be cut back to six leaves in June each year, and again pruned in the winter to within an inch of their base, the main branches being allowed to extend 6 inches annually, until the bush is as large as required.

The fruit of the Black Currant being produced on shoots of the

previous year's growth, the pruning differs very widely from that required by Red Currants, with the exception that the pruning of the young bush at the time of planting is the same.

The further pruning is simple. The young shoots are allowed to grow unchecked, and overcrowding is prevented by thinning out the shoots which have fruited directly the fruit has been gathered, and by cutting back to near their base old branches which have become too "leggy."

This strengthens the wood for the following year's fruiting, and also causes the bush to throw out strong shoots from near the base, and even below the ground-level; for in the case of Black Currants, suckers provide a ready means whereby worn-out branches may be replaced.

Summer-fruiting Raspberries bear their fruit on one-year-old canes, which afterwards die. When making a new plantation the young plants must be cut down to within 6 inches of the ground-level in February, or at the time of planting, if this be very late. This is done to prevent fruiting the first year, which, if permitted, may result in failure to establish a good plantation.

In February of the following year the strongest of the canes may be allowed to fruit, the remainder being cut down to the ground-level.

In the succeeding years many superfluous suckers are produced, and towards the end of May those required to form the next year's fruiting canes should be selected, and the remainder pulled up.

Directly the fruit has been gathered the old fruited canes ought to be cut out, and the young canes for the next year's fruiting tied, 6 inches apart, to the trellis, to prevent injury by strong wind. They should be retied in February and the unripe ends taken off.

Autumn-fruiting Raspberries must be treated quite differently. Each year, in February, *all* the canes must be cut down; and early in the summer the suckers must be thinned out, retaining the strongest, and, weather and season permitting, fruit is produced on the ends of these in September and October.

The pruning of Loganberries is similar to that of summer-fruiting Raspberries. After the fruit is gathered the old canes are cut out, and the young ones tied to the trellis, to fruit the following year.

With regard to the cropping of young Apple and Pear trees, there is often a very natural desire to see them begin to fruit. But looking to the future growth of the trees, time should be allowed for a sufficient development of root and branch systems before more than a few fruits are allowed to form, except in the case of trees making free growth.

To crop a weak tree is to make it still weaker. Instead, such a tree should be well manured, and the flowers nipped off to help it to make growth.

Of course, Bush and Pyramid trees on a dwarfing stock, and grown specially for early fruiting, are in another class. These are very suitable for those who wish to have fruit as soon as possible, and also for planting where space is limited.

In thinning out the heads of old trees first make a clearance of all weak branchlets or adventitious shoots growing from the main branches in the centre of the tree. The branches are sometimes crowded with these, which take food from the better parts of the tree, but give nothing in return. Avoid, if possible, taking off large branches, endeavouring to reduce the crowding by thinning out the smaller branches.

In taking off a branch, make the cut close to the branch from which it originates; the bark will then grow over the wound, leaving no dead stump. With a knife smooth the edges of the saw-cut, and dress the cut surface with Stockholm tar or paint. The best time to do the thinning is soon after the leaves have fallen.

When young fruit trees are planted in strong land, or in too rich a soil, they sometimes make strong, sappy growth which is not conducive to fruitfulness; especially when, in addition, the growth of the tree has to be restricted. While the trees are small, the best way to check the too vigorous growth is to lift the trees and replant them, thereby encouraging the production of hard, well-ripened wood of more moderate strength.

Trees that are too large to be lifted readily may be root pruned. A trench should be dug round the tree 3 or 4 feet from the stem, according to age, severing the roots and going low enough to ensure that no deep ones are missed, and the soil then returned.

The best time to root prune is directly the leaves have fallen.

Standard trees should not be root pruned. Instead, free extension of the branches should be allowed, when fruiting will follow in due course. Root pruning would be likely to weaken the anchorage of these top-heavy trees, and cause them to be canted over by strong gales.

PLANTS IN OUR GARDENS AND HOW THEY CAME THERE.

By The Honble. Lady CECIL, C.B.E.

[Read January 17, 1928.]

No art has followed the history of the British race more closely than that of Horticulture, and the flora of our gardens to-day reflects every phase of our history. Each period has left some trace—the very weeds of to-day were pot-herbs of Roman times. The turbulent Middle Ages, the Crusades, the trade with the Far East, the opening up of the New World, the navigation of the Southern Seas, and the discovery of Australia and New Zealand, all have contributed to adorn the gardens of Great Britain. And all the time that the pioneers of Empire were providing the material, there were clever horticulturists at home working on the fresh acquisitions and producing new florist's varieties to enrich our gardens further.

The picture of a Roman garden in Britain has to a great extent to be drawn from imagination. At the same time, as it was the Roman custom to make their villas in Britain as much like those of Italy as possible, it is not unreasonable to assume that their gardens were also on similar lines. They would terrace, for instance, a hillside near Bath and plant vines and roses just as they did at home. The Anglo-Saxon names of many of our common garden plants show their Roman origin, such as beet, kale, leek, turnip, lily, rose, cherry, fennel, mint, radish, rue, and parsley; so we are led to believe that even the barbarian invasions and the fall of the Roman Empire could not sweep away the plants which were in our gardens during the centuries of Roman rule. This indebtedness to the Romans was recognized by our own ancestors, and a writer in 1654 sums it up in his book, "The Countryman's Recreation," with these doggerel lines:

"To God be praise on high, in all our worldly planting,
Also let us thank the Romans,
For the art of grafting and gardening."

It was not until Britain became Christianized and monasteries and convents had sprung up as a safe refuge, that gardening again flourished. The Church's intercourse with the Continent was the means of bringing in new plants, not only to provide flowers for Church festivals, but for kitchen and medicinal use. In fact in early days it was far more on these accounts that flowers were cultivated. Only "to be an ornament for the Gardens of the curious lovers of these delights" was rare. Incidentally the effect of an old-world garden full of simples must have been very charming, as almost every flower had some supposed healing property and was planted on that account. In the "Cook's garden,"

too, use was made of plants which would never find their way to the kitchen now. For instance, Violets form an ingredient in many recipes, and saffron was in great request. TUSSEK (in 1557) recommends a "fortie foot" plot to produce "saffron enough for a Lord or a Knight," and gives a list of 22 "herbs for sallets and sauce," including sage, tarragon, burnet, betony, fennell, suckerie and such-like, but also "violets of all colours, primroses and marigolds."

The contents of a mediæval garden were largely drawn from our native flora. The old records show that careful cultivation of such wildings formed the chief work of gardeners.

The earliest known list of garden plants by a practical gardener, and not a medicinal or culinary work, is a MS. by "John Gardener" in Trinity College, Cambridge. I brought this MS. to light and transcribed it, and it was printed by the Society of Antiquaries in 1896. Professor SKEAT believed it to be by a Kentish author about 1440. He mentions 97 plants, and although it is a shock to find common plantains, one of the most tiresome of weeds, as well as groundsel, admitted on account of their medicinal virtues, yet 13 plants at least are not native, and must have been brought by the Romans or early Crusaders or travellers.

I will give the 13 names, as I find in some books of reference (JOHNSON, ed. by WRIGHT and DEWAR, 1894) these plants are noted as having been first known in England more than a hundred years later.

Clarey (*Salvia Sclarea*) (1562), South Europe.

Garlick (*Allium sativum*) (1548), Sicily.

Lavender (*Lavandula vera*) (South Europe, 1568).

Leek (*Allium Porrum*) (Switzerland, 1562).

Parsley (*Petroselinum sativum*), Europe.

Rue (*Ruta graveolens*), South Europe.

Saffron (*Crocus sativus*) (not British).

Sanicle (*Sanicula europaea*) (South Europe).

Savory (*Satureja hortensis*) (Italy, 1562).

Southernwood (*Artemisia Abrotanum*) Europe, 1548.

Spinach (*Spinacia oleracea*) (South and East Europe, 1568).

Cress (*Lepidium sativum*) (? Persia, 1548).

Hyssop (*Hyssopus officinalis*) South Europe, 1548.*

In old accounts we find payments for collecting wild plants to fill gardens. For instance in 1530, in the Hampton Court accounts, a sum of 8s. 6d. was paid for gathering 34 bushels of strawberry roots, primrose and violets at 3d. a bushel, "for the new garden." In TUSSEK's "500 Pointes of good husbandry" he says of strawberries to set, "Those growing abroad among thornes in the wood wel chosen and picked prove excellent good." The standard of perfection was not very high, as THOMAS HILL, writing about the same time, says that "by diligence of the gardener" the strawberry would yield as "faire and big

* Probably also "Dy tawnder" (? *Marjoram*, *Origanum Dictamnus*) (from Candia, 1551). Hollyhock (*Althaea rosea*) (Far East, ? 1573).

Beries as the Beries of the Bramble in the hedge." PARKINSON as late as 1629 says "The wilde strawberry that groweth in the Woods is our garden strawberry, but bettered by the soyle and transplanting." He notes, however, the 'Hautboy,' the 'Bohemian' and the 'Virginian White' strawberry, and a variety that JOHN TRADESCANT had just brought from Brussels; but yet another two centuries passed before the hybrid American strawberries such as we know to-day ousted the wild from our gardens. In the same way PARKINSON, although he figures a dozen or more Primroses, double and single, and Polyanthus and Cowslips, says of them "All have been founde wilde growing in divers places in England, so they have been transplanted into gardens, to be there nourished for the delight of their lovers, where they all abide and grow fairer then in their naturall places."

GERARD, who for twenty years was gardener to Lord BURGHLEY, published a catalogue of plants in his garden at Holborn, 1596, which contained nearly 1100 kinds, and he tells us in his Herbal how many were obtained after careful search during long country rambles for rare plants. For instance he possessed 22 varieties of Roses, among them "the pimpermell rose" "a kinde of Dogs rose" "with black hips," which grew "in a pasture as you go from a village hard by London called Knightsbridge unto Fulham, a village thereby." He had many friends in various parts of England who sent him any uncommon plants they found. Other contemporary botanists were equally friendly and record over and over again their indebtedness to friends far and near, not only for native plants but from further afield. Mr. HESKETH was constantly sending GERARD plants from the north of England, THOMAS EDWARDS of Exeter from the west, JAMES GARRET, apothecary, sent him the "Ciprepedium Ladies slipper."

"Mr. GARTH, a worshipfull gentleman and one that delighteth in strange plants," who "very lovingly imparted" to GERARD a Solomon's Seal, received from CLUSIUS, was another of these worthies. "Master NICHOLAS LETE, merchant of London," not only himself searched for flowers both in England and France, but GERARD says was so "greatly in love with rare and faire floures and plants he doth carefully send into Syria having a servant there at Aleppo and in many other countries for which myselfe and likewise the whole land are much bound unto him."

We know Poland to have been among the other countries he obtained plants from. WILLIAM MARSHALL collected in the Mediterranean and sent thence seeds of the Oriental Plane and Prickly Pear or "Prickly Indian Figtree." Many things came to England through "Robinius of Paris" or "Master Robyns," the well-known French botanist JEAN ROBIN, first curator of the Jardin des Plantes. L'OBEL, after whom the Lobelia was named, was a friend of GERARD's and testified to the accuracy of his catalogue of plants; he superintended Lord ZOUCHE's garden at Hackney and brought over many improved varieties from Holland, Denmark and elsewhere. A few years later GUILLAUME BOEL sent many plants to PARKINSON, among them two roots of *Ornithogalum arabicum*, "but they prospered not." With

Larkspur and Marigold seeds from Spain he was more fortunate. RALPH TUGGY, who had a garden at Westminster, was another of the good gardeners of this era who raised what we would now call florists' varieties; he was famous for Carnations, and PARKINSON says the "most beautiful that ever I did see" was "Master Tuggies Princesse." Another Londoner, "Master JAMES COLE marchant of London," who died about 1629, grew the first Laurels, "the bay cherry," as it was called, "at his house in Highgate, where there is a faire tree which hee defended from the bitterness of the weather in winter by casting a blanket over the toppe thereof every year." MATTHIOLUS (after whom Stocks are named) thought the tree came from Constantinople.

The three generations of JOHN TRADESCANT were all gardeners to whom we are indebted for many introductions. Their tomb, erected to "John Tradescant grandsire, father and son," is in Lambeth churchyard. The grandsire came from Holland early in James I's time, having travelled extensively in Europe, as did the father, and he went also to Barbary and the Balearic Islands, and the grandson, after European travel, made a voyage to Virginia. The "father" was gardener to the first Lord SALISBURY for many years, then to Lord WOTTON. They had a garden at Lambeth which became a fashionable resort, and a museum of natural history known as "Tradescant's Ark." The wild or double-flowered Pomegranate, PARKINSON says, his "very loving friend" JOHN TRADESCANT (the second) brought from beyond the seas, and he not only searched for plants himself but bought rarities for his employer. There are bills dated 1611 at Hatfield of his purchases in Paris—Spanish broom, Orange trees, Oleander, Myrtle, various kinds of Figs, Cherries, Pears, Plums and Peaches, Black and Red Currants, Roses, Anemones, Tulips, Fritillaries, Martagon Lilies, etc.

The name of this family is preserved in the Tradescantias or Spiderwort and Tradescant's Aster, brought by the third Tradescant from Virginia, and he introduced also the beautiful Tulip tree and deciduous Cypress (*Taxodium distichum*). Plants from America were slowly making their way to this country all this time; but the difficulty of obtaining them was so great that many years elapsed, after the discovery of a plant, before it could become plentiful. JOHN EVELYN regretted how few Tulip trees were planted, and I have seen a letter from him dated 1686 asking SAMUEL PEPYS to pass on a list of the seeds he required, to a Captain going out to command forces in New England, and the Tulip tree was among them. We all know how Sir WALTER RALEIGH was the first to smoke a pipe of tobacco in England, but the history of the plant itself is not so familiar. Although it was first brought to Spain in 1558, it was JEAN NICOT, the French Ambassador to Portugal, who spread the knowledge of the plant, and is immortalized in its botanical name. The first picture of it in this country is in a curious book entitled "Joful Newes out of the Newfound Worlde," 1596, compiled by Doctor MONARDES of Seville and "Englished by John Frampton, merchant." He only speaks of smoking as a practice of the Indians, and says the plant was used "more to adorne

gardens with the fairness thereof, and to give a pleasant sight, than that it was thought to have the marvelous medicinable virtues which it hath." These virtues embraced a cure for "any grief of the body," or "evil of the joyntes, toothache, chillblains, venomous bites, and many other ills." No wonder after this joyful news was published the tobacco became popular in gardens.

"The Surprising delight of all flowers" was the Passion flower from Virginia, and the Marvel of Peru was another favourite. The Sun-flower became known to the Spaniards through the sun worship practised by the Incas of Peru. Among other plants from the New World in Elizabethan times were *Lilium canadense rubrum*, *Aquilegia canadensis*, Perennial Lupins, *Lobelia cardinalis* and Indian Cress. The majority of new flowers, however, were still coming in from the Old World. Love-in-a-mist from Greece and the Levant, Laburnum from the Alps, Martagon Lilies, Fraxinella, Sweet William, Crocus, Cyclamen, and Christmas Roses from Central Europe, Crown Imperials, Lilac and Sweet Sultan from Persia, and annual Mallows from Syria. But the greatest excitement of all was caused when the Tulip first made its appearance in Europe from Constantinople in 1559. No other flower has ever made such a stir in the world, and although the "Tulip fever" never reached such a height in this country as it did in Holland, whole gardens were given over to its cultivation. The Hyacinth was probably brought by ANTHONY JENKINSON, who went on a trading speculation in raw silk to Persia about 1561, but it was not until the Tulip had held the field for more than 100 years that the popularity of the Hyacinth was established. PETER VOERHELM was one of the earliest cultivators of the double Hyacinth in WILLIAM and MARY's reign. His first double one, called 'Mary,' was lost; but the third he raised and called 'The King of Great Britain' was considered the oldest, and still one of the best as late as 1826.

The Ranunculus, another popular flower, tradition says was brought to France by St. LOUIS from the Crusades, but lost, and reintroduced at the end of the sixteenth century. Lord BURGHLEY had roots sent "divers times from near Constantinople, but they were dry before they came." CLUSIUS was more successful, and had a plant "fresh and Greene the which" alas! "a domesticall theefe stole foorth of his garden." In spite of these difficulties the Ranunculus was established as a florist's flower, and by the end of the eighteenth century there were upwards of 800 named varieties.

From the time of Queen ANNE onwards a succession of travellers were bringing plants from America. KALM, a Swedish botanist, visited England on his way, and to him we owe Kalmias. MARK CATESBY, who collected in North Carolina, introduced the Catalpa, which he found in gardens there, and we hear of it flowering with Gray, a nurseryman of Fulham, in 1748. In the same garden the first *Magnolia grandiflora*, from Carolina, was grown. CATESBY was a friend of Sir HANS SLOANE, who gave, in 1712, the site of the Chelsea Physic Garden to the Apothecaries' Company. It had been established in

1673, and there the first Cedars of Lebanon in this country were grown. London was fortunate at that time in having many first-rate practical gardeners. PHILIP MILLER, curator of the Physic Garden, was one of these. PETER COLLINSON, a contemporary, praises MILLER for "his success in raising seeds procured by a large correspondence," and after his visit to it on July 19, 1764, he thought that the Physic Garden "excels all the gardens in Europe for its amazing variety of plants."

THOMAS FAIRCHILD of Hoxton (who is still remembered by a sermon preached yearly at St. Leonard's, Shoreditch, on or about Whit Tuesday) and some twenty more were all clever in growing and distributing the fresh introductions. COLLINSON tells how Mr. VERNON, a Turkey merchant at Aleppo, brought a Weeping Willow from the Euphrates and planted it at Twickenham, where he saw it in 1748, and declares "this was the original of all the weeping willows in our gardens." COLLINSON raised many things himself, and was the first to flower a tropical Orchid in this country (*Bletia verecunda* from the Bahamas). He had the seed of Rhubarb with broad curled leaves from Dr. AMMAN, Professor of Botany at Petersburg, whose father-in-law was Governor of the province near which it grew. "The seed of that with long narrow curled leaves was sent," he says, "by the Jesuits in China to my friend Dr. TANCHES at Petersburg by Russian caravan, and he sent it to me." Double Spanish Broom was sent him by Mr. BREWER of Nuremberg, "where it cost a golden ducat and, being planted in a pot nicely wickered all over, came from there down the river Elbe to Hamburg from whence it was brought by the first ship to London. I inarched it on a single flowered broom and gave it to Gray and Gordon gardeners, and from them all have been supplied." He had roots of Siberian Martagon sent by Mr. DEMIDOFF, proprietor of the Siberian iron mines, and a "Linaria" (he calls it *procumbens*) "from Gibraltar Hill" in 1727, and in 1751 he raised the Paper Mulberry (*Brussonetia papyrifera*) from seed sent by Dr. MORTIMER from China.

About this time various Azaleas and Rhododendrons were coming in from America, but it was not until fifty years later that *Rhododendron ponticum* from Asia Minor began to flood our shrubberies. Sumachs, Allspice and Hydrangeas all came in during the same period, and Camellias were first imported in 1739 by Lord PETRE, were lost owing to being treated as stove plants, but were reproduced four years later. But the great plant-wave, if I may so call it, at the end of the eighteenth and early nineteenth centuries was from South Africa. The introduction of Cape Geraniums, and Pelargoniums and their garden hybrids, owing to the easy way in which they struck, and with protection through the winter would make a dazzling display in summer, led to the bedding-out fashion, which became so strong as to push the older herbaceous plants completely into the background. The green-houses too were filled with them and other Cape plants, chiefly Heaths—I have seen an almanack with a different Heath for each day of the year*; the greater part of these had been collected by MASSON, who

* *The Garden Oracle*, 1860.

made two voyages to South Africa at King George III's expense. The Heaths which became such favourites found rivals in the Epacris, hard-wooded plants, some very similar in appearance to Cape Heaths which were coming in from Australia. The wonderful discoveries of Captain COOK were directly beneficial to horticulture, as the famous botanists Sir JOSEPH BANKS and Dr. SOLANDER accompanied the expedition. The Banksian Roses with small white or buff double flowers are familiar to us all, but the single, which was known to have been found, was entirely lost. In 1790 Captain ROBERT DRUMMOND of Megginch brought one home from China and planted it on his castle wall in Perthshire. The plant actually survived the cold for over 100 years, but no one knew it was the long-lost single rose as it never flowered. A few years ago a friend took a cutting out to his garden on the Riviera, which struck, and the enforced rest came to an end, and the brave rose was covered with white single blooms, and in the summer of 1926 the original plant actually flowered at Megginch after 136 years!

It was during COOK's first voyage to New Zealand, in October 1769, after having had an unpleasant reception by the Maoris near Poverty Bay, that he turned northwards and anchored in Anaura Bay, and having a friendly welcome he remained there a day so that BANKS should have an opportunity of collecting. Among the 90 specimens he obtained on that day was the beautiful "Glory Pea" (*Clianthus puniceus*), which the Maoris cultivated near their dwellings.

The first Japan Quince (*Cydonia japonica*) BANKS sent to Kew in 1793. The Royal Gardens, Kew, had only been founded about 30 years earlier, and in the hands of able Directors they steadily increased in importance as a centre to which new plants were consigned. The Royal Horticultural Society, started in 1804, has borne a noble part in the introduction of fresh treasures, and the firm of VEITCH has, through its collectors, brought a marvellous number of choice plants to this country. It would be impossible to name all the men who have journeyed afar—and often risked their lives—for horticulture: foreign collectors such as SIEBOLD in Japan, as well as British, like DRUMMOND in the United States, MENZIES in the Sandwich Islands, LOBB in America, JOHN GOULD VEITCH in China, Japan, Philippines and Australia, Sir JOHN KIRK in Central Africa, and JAMES BOWIE at the Cape. JOHN FRASER (1750 to 1811) had thrilling adventures in Newfoundland, Russia and Cuba. There in 1802 he was wrecked on a coral reef, and with 16 of the crew, after six days of great suffering, he was picked up by a Spanish ship on her way to England. This ship sprang a leak, and it was only after working night and day at the pumps that they managed to get to the West Indies. Perhaps the greatest number of plants reached Kew in the first half of last century through the East India Company, and the glorious show of Rhododendrons we enjoy there to-day is the result of the strenuous efforts of the eminent Directors of the Calcutta Botanical Gardens, particularly ROXBURGH, WALLICH and FALCONER, and the adventurous travels of Sir JOSEPH HOOKER in Sikkim and Nepal. From Australia there came various Acacias, the

Swan River Daisy, and so on, found by the brothers CUNNINGHAM, RICHARD and ALLEN. Richard, who was sent from Kew to the Colonial Garden, Sydney, when penetrating inland in search of timber for the British Navy, met with a tragic end. Having lost his way in the waterless bush he fell exhausted into the hands of aborigines, who killed him, although at first they appeared friendly. The Blue Mountains, with their precipitous cliffs and waterless valleys, had defied all efforts to penetrate their mysteries, and the account of how ALLEN CUNNINGHAM, as successful an explorer as he was botanist, overcame all obstacles, is one of the many delightful adventure stories of the Empire. Perhaps more thrilling still are the travels of ROBERT FORTUNE in China. Sometimes he was entertained and fêted by mandarins or Buddhist priests, at other moments his life was in danger, disguised as a Chinaman or fighting single-handed against pirates. He sent home numberless plants, *Buddleia Lindleyana*, the Chusan Daisy (the parent of all Pom-pom Chrysanthemums), the hardy Fan Palm, Fortune's Yellow Rose, *Forsythia viridissima*, the winter-flowering yellow Jessamine, *Kerria japonica*, *Diervilla rosea*, white Wistaria, some Azaleas, and a host of other well-known things. One more wonderful traveller I must not omit, and that is DAVID DOUGLAS, who collected all over the Far West of America and Canada in the Rockies, and met his death in a tragic way in Hawaii by falling into a concealed pit, dug to catch cattle, and was believed to have been killed by the wild bull in it. He found not only the Pine which bears his name, but *Abies nobilis*, *Pinus Lambertiana*, *P. insignis* and many others, the handsome *Taxodium sempervirens*, and a great many of the most familiar annuals, *Nemophila insignis*, Clarkias, Godetias, Eschscholzias, etc. The difficulties these men had to face to preserve plants may be realized when one thinks of the voyage even, and the time it took. DOUGLAS' journals have recently been published by the Royal Horticultural Society. For his first voyage in 1823 he left London by coach to Liverpool on June 3 for Philadelphia and New York, which he reached on August 3; his second voyage he started in the brig *William and Ann* on July 25, 1824, for the Columbia river, and reached "Fort Vancouver" on the 12th of the following February. On his return journey across Canada to Hudson's Bay he walked 800 miles; leaving Vancouver on March 20, he reached Hudson's Bay on September 15.

The task of bringing plants home under these conditions was no easy one. Nowadays, although our collectors in Tibet and China are facing great difficulties, at least when they reach rail or ship, transport becomes swift and easy; long ago the sea voyage cost the life of many plants, until the invention of Mr. N. B. WARD, known as the "Wardian case," overcame this. Plants were placed growing in moist earth or suspended in these glass-covered boxes and travelled long distances without attention. The first plant brought over in one was the *Pernettya*, found in the Straits of Magellan. It flowered in London in June 1838. LODDIGES, a well-known firm for Orchids and exotics, had received 200 cases with plants growing successfully in this way by 1839.

The history of Orchid hunters would fill a book by itself, and I have not time to touch on it to-day. I have tried to tell something of the collectors and their efforts to obtain plants from our own and foreign lands during successive centuries. Some have travelled in the cause of science generally, some engaged in trade have just kept a look-out for flowers, others have gone out with the express purpose of finding some particular plant, to satisfy the fashion of the day. We have noticed the special journeys for Heaths, Rhododendrons, Pines or Orchids, and the present is, perhaps, the turn for Alpines. Many we grow now have really been quite a long time in our gardens, for instance, *Gentiana acaulis* was here in 1629, *Arabis alpina* earlier still, Aubretias in 1710, *Ramondia pyrenaica* 1731, *Erinus alpinus* 1759. Soldanellas, Androsace, *Linaria alpina* and quite a number of Saxifrages and Sedums were here, but they were so badly grown on the old heaps of stones that went by the name of "rockery" that no wonder they did not attract much attention; it has only been with the development of rock gardens during the last 50 years that a real demand for Alpines has aroused the same spirit of adventure and attracted botanists to the highlands of Tibet and the farthest corners of China to satisfy this craze.

It was not always with such trouble that plants were obtained. The Guernsey Lily (*Nerine sarniensis*) was washed ashore in the Channel Islands in 1659. The Scarborough Lily (*Vallota purpurea*) reached our shores in the same way in 1774. The Fuchsia came to Kew in 1788, but LEE, a nurseryman of Hammersmith, was the first to distribute it a few years later. He saw by chance a plant that a sailor had brought home from South America as a present to his wife in her window in Wapping, and it was only after he had offered eight guineas and promised two of the young plants that she would part with the flower, which soon became one of the most popular in the kingdom. Many more romantic stories might be told about numbers of the plants which we see growing in our gardens to-day. I have only passed rapidly over the ground as far as the middle of last century, and feel sure that if this sketch has stimulated any interest, it will well repay you to go more deeply into this fascinating story of how familiar plants have reached our gardens.

THE TRADESCANTS AND THEIR TIMES.

c. 1600-1662.

By DOROTHY GARDINER.

PART I.—JOHN TRADESCANT THE ELDER.

(i.) *Tradescant in Canterbury.*

WHEN in the March winds the double Daffodils sway, a little heavily, in some crowded cottage garden, it is the moment to lay a garland of remembrance on the strange altar tomb in old Lambeth Churchyard which covers the mortal dust of JOHN TRADESCANT the elder, as well as the son and grandson, his namesakes. Some people may prefer to make his day when Lilacs flower; others when they play bob-cherry or set their teeth in the first luscious apricot of the season. But before all the other charming things Englishmen owe to JOHN TRADESCANT, the double Daffodil is his special token, and in its season his festival should fall. "This Prince of Daffodils," says his friend PARKINSON the herbalist, "belongeth primarily to John Tradescant as the first founder thereof that we know, and may well be entituled the Glory of Daffodils"; and GERARD, the last of the herbalists, gives it the botanic name of *Narcissus roseus Tradescanti*. One may perhaps feel that, in the process of doubling, the slender beauty of the single wild variety is "improved away"; yet it is just that something more remarkable than Nature of everyday observation which the TRADESCANTS, father and son, admired and sought after all their days.

The TRADESCANT family, if Dutch in origin, had long been domiciled in East Anglia; but JOHN the elder first comes under the eye of history in a Kentish village. In 1607, at Meopham, he married his wife, ELIZABETH, and there in 1608 his only son was born. His appearance at Meopham can reasonably be accounted for. He was in the service as gardener of ROBERT CECIL, the first Earl of SALISBURY and Lord Treasurer of England. The CECILS owned the manor of Shorne, in the neighbourhood of Meopham, which gave TRADESCANT an opportunity of wooing and winning a Kentish wife.

During these years he was steadily gaining experience in fruit-culture, and several times went abroad, at his master's charges, to purchase new varieties of fruit-trees for the garden at Hatfield. "He hath wonderfully laboured," says PARKINSON, "to obtain all the rarest fruits he can hear of in any place of Christendom, Turkey, yea, or the whole world." * Some information about his foreign journeys may be gleaned from the original bills, presented in January 1611 and

* Parkinson's *Garden of Pleasant Flowers*, p. 575.

preserved among the Hatfield papers, for "Routes, flowers, seedes, trees and plants . . . by him bought for my Lo.": extracts from these were printed for the first time in the Hon. Lady CECIL's "History of Gardening in England."

TRADESCANT visited Haarlem, Brussels, and Leyden, where he bought, for the orchard, cherry, mulberry, and apricot trees, and two varieties of quince, the "rathe ripe portingall quince," costing 6s., and the "lion's quince," only half as dear; and for the flower-garden, anemones, Provence roses, tulips, martagon lilies,—"*pompong blanche* and *pompong orang coller*," and various irises,—"*Irys calcedonys* and *Irys susyana*." In Paris he procured the trees of more southerly climes, a pomegranate, pots of oranges, oleanders and myrtles, muscat grapes, and "malecotton" peaches, while his friend, Master Robyns, —that is, VESPASIAN ROBIN, the first curator of the Jardin des Plantes—made him a present of some white figs and other rare shrubs.

Even TRADESCANT's skill did not always induce his transplantations to thrive in their new surroundings. The strawberry plant from Brussels disappointed his expectations; "in seven years [he] could never see one berry ripe on all sides, but still the better part rotten, although it would every year flower abundantly and bear very large leaves."* With cherries, as with plums, he had, however, a particular success; "one excedyng great cherye called the boores cherye," costing 12s., as well as "the Archedukes Cherye," he introduced from Haarlem, and from France a variety called "Biggandres"; but his greatest triumph was Tradescant's Cherry, which is figured among the sixty-four coloured drawings of fruit in the Bodleian MS. traditionally known as Tradescant's Orchard. This was a black cherry, of distinctive shape and flavour, ripening towards the end of June; an early nineteenth-century writer says that in his day it was "very scarce and so little known that it would be the most difficult task to find it."†

TRADESCANT's next situation, with the Lord WOTTON, brought him back to Kent, and to Canterbury.

The date at which EDWARD, Lord WOTTON of Marley, acquired St. Augustine's Palace, in the ruins of the Abbey, from ROBERT CECIL (to whom it had been granted in 1603 on Lord COBHAM's attainder) can be brought within narrow limits from the Canterbury City Records. During 1609 Lord CRANBORNE, the heir of the Cecils, visited Canterbury and received a present from the authorities, probably a sugar-loaf, the fashionable offering. In September 1611 5s. was paid for a Fordwich trout sent to Lady WOTTON "at her first coming to the Pallace with my Lord." In the interval the property had changed hands. After this, for the next ten or fifteen years, the new owners were often in Canterbury, frequently inviting the Mayor and Aldermen (who spared no pains to keep in his Lordship's good books) to visit at the Palace, and making them a present twice a year, on the 5th of November and

* Parkinson, p. 528.

† Brookshaw, *Pomona Britannica*, 1817, quoted *History of Gardening in England*, p. 270.

during the summer, of a fat buck or doe. Certain servants of Lord WOTTON—keepers who carry the venison to the Guildhall, porters who admit guests to the grounds—are often mentioned and as often “tipped.” Lord WOTTON’s secretary, appropriately named Mr. PENNE, also did some service to the City Council, and was more handsomely rewarded. But so far the curtain has not risen upon any glimpse of Lord WOTTON’s gardener. Nor does his name appear in rentals of St. Augustine’s property, and he probably resided within the grounds.*

CECIL, however, died in 1612, and there can be little doubt it was at this time TRADESCANT changed masters, exactly as the Abbey had already changed hands; from “belonging to” the CECILS (PARKINSON’S phrase), he entered Lord WOTTON’S service.

In all likelihood the garden under his charge covered the same area as the present walled garden of the Warden and Fellows of St. Augustine’s Missionary College. Even at the present time the space available for cultivation is limited by the position of the ruins, and in TRADESCANT’S day much larger portions of the Abbey and the monastic buildings remained above ground. The garden is bounded on the east by the Abbey itself: part of a wall of Tudor chequer-work remains on the north; the south wall contains many Roman tiles, and is believed by some antiquaries to have been the boundary of the Roman road towards Richborough, before that was deflected by the monks to form the present Longport.

This sun-flooded garden it doubtless was that TRADESCANT set to work to make famous through the countryside. A hint or two survives to tell us what flourished in his borders. He followed the pleasant perennial fashion of exchanging plants with fellow-gardeners; PARKINSON speaks of *Moly Homericum*, the great Moly of HOMER, which J. T. grew at Canterbury, and he adds “He sent me the head of bulbs to see, and afterwards a roote, to plant it in my garden.” Under this literary name all may not recognize the Wild Garlic flowers which (says our author delightfully) “smell most of their first grandfather’s House.” † Then, too, the Canterbury Bells, double and single, white and deep purple, which later appear among TRADESCANT’S Lambeth plants, were certain of a corner in a garden under the shadow of the cathedral. Garden-lovers came from the neighbourhood to seek TRADESCANT’S advice. In March 1620 Sir HENRY MAINWARING wrote to Lord ZOUCHE, then Warden of the Cinque Ports, that on the previous Saturday he had gone to Canterbury “to see my Lord Wotton’s garden and confer with his gardener, for I do much desire that your lordship should eat a Musk Melon of your own in Dover Castle this year, where a little to entertain the time I do fit and furnish your lordship’s garden as well as I can. . . .” ‡

* Cf. *Hist. MSS. Comm. Report IX., Canterbury City Records*, passim, and the *City Treasurer’s Accounts 1610–20*, passim.

† Parkinson, p. 141.

‡ *Dom. State Papers, James I.*, March 27, 1620, P.R.O.

Canterbury has always been the passage-way along which news of the world's doings travelled to and from the rest of the kingdom. The period 1605 to 1616 were years of great activity in the first colonization of America, and accordingly we read of WILSON, the post, riding into the old city with letters concerning Virginia addressed to the Mayor. During the winter of 1616-17 the Virginia Council began a publicity campaign, advertising the prosperity of Virginia, and urging the need of more colonists to develop the resources of the new settlement. Captain SAMUEL ARGALL, the captor of Pocahontas, was appointed Admiral of Virginia and licence given him to carry out a band of settlers at his own expense. He raised the necessary funds by associating with himself a body of subscribers, among whom Sir WILLIAM LOVELACE, member for Canterbury, at this time living at his house in the Grey Friars, and JOHN TRADESCANT contributed the large sum of £25 apiece. TRADESCANT did not go to Virginia himself but made use of his connexion to supply his garden with new plants, among them the little purple-flowering Rush, to which PARKINSON gave the name of soon-fading Spider-wort of Virginia, or TRADESCANT his spider-wort, "until some can find a more proper." A friend brought it home, believing it to be the "Silke-grass," and TRADESCANT, as usual, "imparted" specimens to PARKINSON and many others.*

(ii.) *His Russian Adventure.*

The next year he embarked on an adventure of his own, in company with his neighbour, Sir DUDLEY DIGGES, who since 1616 had been living close at hand at Chilham, building his fine new house designed by INIGO JONES, and laying out his gardens.

Sir DUDLEY, who eventually became Master of the Rolls, though ignorant of the Law, was a shareholder in the East India Company, and interested in the project of a North-West passage. He was sent by JAMES I to negotiate the terms of a loan to the Emperor of Russia for his Polish wars, on behalf of the Muscovy and East India Companies, and JOHN TRADESCANT was attached to the party in the same capacity as a scientific observer to a modern explorer's expedition. The travellers sailed from Gravesend on June 3, 1618, in the good ship *Diana*, commanded by Captain SWANLEY of Limehouse, and landed at Archangel, having followed the Trade Route round the North Cape opened up in 1553.

From the moment the *Diana* slipped from dock at Bristol, TRADESCANT was in his element, keenly observant, and making note of every natural phenomenon which crossed his path.

Sixty leagues from land a bird came aboard: "It was taken alive and put in my custody," says his diary, "but died within two days after, whose like I never yet saw, whose case I have reserved."

On July 15 the *Diana* came into harbour at Archangel. Eager to lose no moment of his priceless opportunity, TRADESCANT begged to be

* Parkinson, p. 152.

put ashore to examine the flora. Amongst other treasures he found the Yellow Cranberry, used by the natives as a remedy against scurvy, dried some berries and saved the seeds to send to his friend, VESPASIAN ROBIN. On July 20 he explored the islands in the delta of the Dwina, north-west of Archangel, in one of the Emperor's boats, "where I found," he says, "single Roses, wondrous sweet, with many other things which I mean to bring with me. . . . I hope they will bothe growe and beare heere, for amongst many that I brought hom with the Roses upon them, yet some one may grow." Elsewhere he was filled with admiration for the Pinks "growing naturall [wild], of the best sort we have heere in England, with the eges of the leaves deeplie cut or jaged very finely," and he admitted, with a certain jealousy for his own fruit-garden, that the splendid Currants, red, black, and white, were "far gretter than I have ever seen in this cuntrie."

How he gathered the "reports" of which he made such careful notes it is hard to say, as he could speak no Russian; but to his eager curiosity the very weeds, like the Wormwood which Russians call God's Tree, were endowed with "pasing sweetness and great vertue."

Besides Muscovy roses for his English garden, TRADESCANT took away with him shoots of the Bird-cherry and some branches of Dogwood, laden with red berries; but the ship's boys ate all but a few which he found scattered on the ground, and gave him salt, instead of fresh, water for his plants, so that many withered away.

The travellers landed in London on September 22, Sir DUDLEY without his trading rights and £10,000 the poorer by the trickery of the Muscovite potentate; TRADESCANT laden with plants and curios of every description; in his notebook the earliest list extant of Russian flora.*

Having once tasted the joys of travel, TRADESCANT was eager for fresh opportunities to add to his botanic knowledge and his garden's loveliness. In March 1620 he was at Canterbury teaching Sir HENRY MAINWARING to grow musk melons: at Michaelmas he placed his son JOHN for three years as a scholar at the King's School,† and in October as a gentleman adventurer, joined an expedition under Sir R. MANSELL against the pirates of Algiers. He sailed in a merchant vessel armed with 24 guns, commanded by his old associate Captain ARGALL, and troubled the pirates but little. At much risk to himself, in his ardour for observation he must have gone ashore, for he assured PARKINSON that in Barbary he had seen many acres of ground spread over with the "Corn Flagge of Constantinople" (the *Gladiolus*), and a trophy of this voyage, "the Argier Apricocke, yellow, sweet, and delicate," soon found its way into every gentleman's garden in England.‡

* For the Russian voyage see Hamel, *Tradescant der Aeltere 1618 in Russland*.

† Cf. *Auditor's Roll, King's School, Canterbury, 1620-23*, p. 168 et seq.

‡ Parkinson, p. 519, and Gerard's *Herbal*, p. 1448.

(iii.) In Buckingham's Service.

JOHN TRADESCANT the younger left the King's School in the summer of 1623; three years later Lord WOTTON died, and St. Augustine's passed to his son THOMAS and his wife, the second Lady WOTTON, who has left her name to a Green at the Abbey gate. The great gardener had before this been advanced to the service of the royal favourite, GEORGE VILLIERS, Duke of BUCKINGHAM, and in 1625 he was living at Newhall. The thirst for information, the lust of collecting not only plants to enrich his garden but objects of curiosity in every department of natural science, grew upon him as life advanced. Where he could not himself discover he set others to work, and employed his master's brief despotism to further the ends of knowledge. A letter written (ostensibly at BUCKINGHAM's request) to EDWARD NICHOLAS, Secretary to the Admiralty, breathes the collector's passion in every line. It is not the proud VILLIERS but the "painful and industrious searcher and lover of all nature's varieties" who requests NICHOLAS, in the Duke's name, to deal with all merchants from all places, but especially the "Virgine and Bermewde and Newfound Land, men or travellers from Ginne, or Binne (Benin) or Senego Torkye, that when they go into those parts they will take care to forniche his Grace with Allmaner of Beasts and fowels and Birds alyve, and if not, with heads, horns, beasts' claws, skins, fethers, flies or seeds, plants, trees or shrubs."

One or two promising sources are specially indicated, such as Sir THOMAS ROWE, "Leger" at Constantinople, and Captain NORTH, the promoters of the new plantation towards the Amazon. From the East Indies he hopes to have shells, stones, bones, egg-shells, and from Holland a pair or two of young storks and of ruffs. A further note gives the treasures he desired from the Gold Coast and the Guinea Company and from merchants at the Cape: "Imprimis one Elephant's head with the teeth in it, very large. One River-horse's head of the Biggest that can be gotten. One Sea-bull's head with horns. . . . Snakeskins, especially the sort that hath a comb on his head like a cock. Beans, black and red, seed-pods, and dried flowers laid between paper leaves in a Book." The list ends with this characteristic demand: "Anything that is strange."*

TRADESCANT's exploring instincts rather than loyalty to the favourite may have induced him in 1627 to follow BUCKINGHAM on the ill-fated expedition to the Ile de Rhé. In want and discomfort BUCKINGHAM's forces awaited the arrival of Lord HOLLAND with reliefs; WILLIAM BOLD, who went out to join the party, wrote to NICHOLAS of their condition: "If my Lord of Holland be not speedy they must truss up bag and baggage . . . the winter comes on apace and JOHN TRADESCANT is one of their best engineers; pity our misery." But TRADESCANT's spade was turned also to more congenial uses, and even from the Ile de Rhé he brought back a plant of *Leucojum*.†

* *Dom. S.P. Ch. I.*, vol. iv. 155, *P.R.O.*
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† Hamel, p. 205.

(iv.) The Royal Gardener.

TRADESCANT's next promotion he owed to the disappointment of another man. One cause of BUCKINGHAM's unpopularity was his habit of thrusting his own followers into places about the court at others' expense. In this instance JAMES HAYDON, a servant of JAMES I, had received from King CHARLES the "garnetter's place" at Whitehall, but in 1629 he made a formal complaint of its having been given instead, by the late Duke, to JOHN TRADESCANT, a servant of his own.

An interesting find among the papers of the Hampshire botanist, JOHN GOODYER of Petersfield, enabled Dr. GUNTHER in 1922 to publish the elder TRADESCANT's garden-lists for the years (1629-1634) during which he served in the royal gardens of Whitehall and Oatlands in Surrey at a salary of a hundred pounds a year.

About the date of his appointment as garnetter at Whitehall began his connexion with South Lambeth. In his day this quarter was very different from the unattractive region into which one now emerges from under the railway arch at Vauxhall Station.

TRADESCANT's house, a tall, old mansion with a high-pitched and gabled roof, was on the main road into Surrey, part of which still survives in the old South Lambeth Road: Tradescant Road and Walberswick Road, so called out of complement to Tradescant's Suffolk origin, two streets of mean houses close to the tram-line, now mark its site; it finally disappeared only in 1881. Here TRADESCANT made his home and planted his Physic Garden; here in "Tradescant's Ark," the parent of all modern museums, he displayed his treasures, the accumulations of a lifetime; and here promptly began that series of visits to wonder and admire which by degrees established the Ark as one of the educational features of London. Among its earliest patrons were CHARLES I and his Queen, the Duke of BUCKINGHAM, the Earl of SALISBURY (son of TRADESCANT's former master), Archbishop LAUD, his near neighbour at Lambeth Palace, and Sir THOMAS HERBERT, the Persian traveller who came often bringing objects he had collected in strange lands.

The exact death-date of the elder TRADESCANT is unknown, for Lambeth Church Registers are missing for a few months after July 1637, but the Churchwardens' accounts for 1637-8 have the significant entry: "Item John Tradeskin; Ye gret bell and black cloth 5s. 4d."

PART II.—JOHN TRADESCANT THE YOUNGER.

(i.) The Ark.

The elder TRADESCANT's will shows him to have been a man of substance, owning property at Woodham in Essex, and houses in Long Acre and Covent Garden. To his son JOHN, his successor in the post of Keeper of His Majesty's Park at Oatlands, he left all that he possessed, with the proviso that if he desired to part with the "cabinet of rarities" he should offer it to "the Prince"—that is, CHARLES, the child Prince

of Wales, born in 1630. It was an empty compliment ; there was but little likelihood that the younger JOHN, who inherited to the full his father's tastes, and had now a young son, the third JOHN TRADESCANT, would desire to part with a collection which had grown with his growth, even to the future King of England. Moreover, he had himself made additions to the Physic Garden, and in 1637 was in Virginia collecting rare flowers ; henceforth around his garden and the Cabinet of Rarities life centred. Wars and rumours of wars troubled him but little ; while across the water, at Westminster, Parliament held turbulent assembly ; while his master, CHARLES I, stepped from the Palace window at Whitehall to meet the executioner's axe, he laboured on, perfecting his knowledge and his epitome of all nature's varieties. The Puritans apparently took no exception to an exhibition which gained steadily in popular favour and was visited by searchers after truth, whether school-child or serious student. HOOLE in his " Art of Teaching School " speaks of London as " of all places in England best for the improvement of children in their education, because of the variety of objects which daily present themselves to them, or may easily be seen, once a year, by walking to Mr. John Tradescant's, where rarities are kept."

Where, however, Puritan severity had left Tradescant's Ark unmolested, at the Restoration its popular renown apparently excited official cupidity. In 1661 Sir HENRY HERBERT, Master of the Revels, issued to his officer, RALPH NUTTING, a warrant to bring before him JOHN TREDESKYN for " making shew of severall strainge creatures without authority from his Maiesties Office of the Revells." TRADESCANT complained to the King of this high-handed arrest, and from a prince once potentially the owner of his treasures received not only permission to carry on a practice " of very harmless import " but also a handsome royal testimonial. It ran as follows :

" Our express pleasure is that the said Tradeskyn be suffered freely and quietly to proceed as formerly in entertaining and receiving all persons whose curiosity shall invite them to the delight of seeing his rare and ingenious collection of Art and Nature." * One might as well have attempted to arrest MASKELYNE and COOK. With the assistance of his friend ELIAS ASHMOLE, TRADESCANT prepared a catalogue of the collection, the need of which must have been felt by the numerous visitors. Its publication was delayed by a tragic event ; in 1652 the third JOHN TRADESCANT, an only son, died at the age of nineteen, and was laid, but a name and no fame, untimely cut off, in Lambeth Churchyard.

At last, in 1656, appeared " the Musaeum Tradescantianum, or A Collection of Rarities preserved at South Lambeth near London by John Tradescant." The book is extremely curious and interesting and is illustrated with fine portraits by HOLLAR of both the royal gardeners. The elder JOHN has aquiline features, large thoughtful eyes, curly hair and beard, and wears a skull-cap : the younger JOHN has a short beard and a less refined face.

* *Dom. State Papers Ch. II., xxx. vii. 74, P.R.O.*

(ii.) *The Physic Garden.*

Besides the enumeration of "Naturalls" and "Artificials,"—the Dragon's Egg and the Dodo, the carved agate and cameo, the flea-chains of 300 links, the knitted gloves of Edward the Confessor—the volume contains a catalogue even more attractive to garden-lovers; in deference to a scholar of the King's School let us quote its full title in Latin, "*Catalogus Plantarum in Horto Johannis Tradescanti nascentium.*" By its means we may tread the pleasant walks of that vanished garden; there we may see, in imagination, trees and plants from Virginia and New England, brought over by the elder JOHN's friends or by the industry of the younger JOHN*;—Indian Sorrell, Virginian Ladyes Bower, "Amaracock, sive Clematis Virginiana, the Virginian Clymer or Passion Flower," the New England Strawberry, the Virginian Woodbine Tree, the Great American Dasie, and so forth. From Barbadoes came a Sensitive Shrub, a Carob, a Cabbage-Tree; from the East, the Double Orange Tawney Anemone of Constantinople, the Sea-Holley, a Silver-coloured Saffron of Mæsia, and another "ex insula Chios"; from Spain, the Aloe, the Kidney Vetch with scarlet flowers, the Asphodel, the Jasmine; there were "Dames Violets of Italy," ivy-leaved Italian Sow-bread, Cyclamen, Star-wort; broad-leaved Betony from Denmark; from Germany a "red indented Honeysuckle," and the "German Hoary-tree"; Flower-de-Luce from Persia and Africa, a yellow Mallow from Tartary. Some members of that cosmopolitan company had travelled from the mountains, like the Pyrenean Harrow and White Campion, the Soapwort and Sanicle of the Alps or the Gentianella Alpina Helvetica; others were torn from the marsh-lands, like the Osmund Royall. Many plants bore as a special distinction their owner's name, Tradescant's Virginian Cypress, and Virginian Maple: Tradescant's narrowest-leaved Virginian Foxglove, and his greatest Beares ears (Auricula). There was a large sprinkling of unassuming herbs that are now common English wild-flowers, but the garden did not lack a blaze of colour in season, thanks to its "great variety of gallant Tulips," the scarlet martagon-lilies from Hungary and purple gladioles from Constantinople, the poppies—"Corn-roses" is TRADESCANT's name for them—the roses of Austria, Muscovy and Virginia, Damask, Burnet and Monthly Roses. In the spring, also, there was a great profusion of hyacinths, from the Amethyst-coloured English Jacynth to the white starry Jacynth of Peru. The pages of the little book are redolent of flower-scents, and crowded with old-fashioned flower-faces, and their quaint names,—the Wilde Beares breech (Acanthus), the wholesome Helmet flower (Aconite), the Great Floramour or purple flowre gentle (Amaranth), the White Sattin Flowre (Viola), Jupiter's Distaff (Clary), Wilde Mercury called Quick-in-Hand (Persicaria), the cowslip "fatua" or Jack-an-Ape on Horseback.

* The original spelling of the catalogue is preserved.

The younger TRADESCANT died in April 1662, and was buried with his father and son in Lambeth Churchyard. The Cabinet of Rarities, presented to ELIAS ASHMOLE by a deed of gift which the owner's will failed to confirm, ultimately, as is well known, passed to the University of Oxford. ASHMOLE had no interest in the botanic collections. TRADESCANT'S wife, HESTER, a lonely, childless woman, drowned herself, sixteen years after her husband's death, in the pond in the Physic Garden. After this tragedy the place slipped into neglect and oblivion.

ANDREW DUCAREL, the Lambeth historian, says that "very few of Tradescant's rare plants were remaining at South Lambeth in 1718 : only a very fair horse-chestnut-tree, some pine trees and sumach trees, phylereas &c. and at the entrance into the gate, over the bridge of the mote, were two vast ribs of a whale." * Twenty years go by, and two later visitors record the total neglect of the garden, the ruinous condition of TRADESCANT'S empty house. "Yet," adds the narrative, "though the garden is quite covered with weeds there remain among them manifest footsteps of its founder." These were a plant of borage, a trailing clematis, the broad-leaved polygonum, two immense arbutus trees, and, in the orchard, "a tree of Rhamnus catharticus, about 20 feet high and near a foot in diameter, by much the greatest I ever saw." †

Yet, after all, it matters little that the very site of the Physic Garden has passed from memory, when, in a thousand English gardens, while the daffodils flower or the apricots ripen on sunny walls, the name of JOHN TRADESCANT also blossoms anew, and the fruit of scrupulous, industrious search after nature's varieties remains a source of delight to succeeding generations.

* Ducarel, *History of the Parish of Lambeth*, p. 128.

† *Ibid.* p. 95 (Account of Sir William Watson, F.R.S.).

MAGNOLIAS.

By J. G. MILLAIS, V.M.H.

[Read July 19, 1927; Mr. P. C. M. VITCH, V.M.H., in the Chair]

THE number of Magnolias recognized by botanists is forty-two, distributed in two great areas: the North American area, ranging from West New York down to Mexico; and the greater part in the Eastern hemisphere, ranging from Japan south to the Nepal Himalayas and south again to Java and Sumatra.

Magnolias comprise a number of evergreen and deciduous shrubs and trees, ranging from 4 feet up to 90 feet and even more. We do not know how tall *Magnolia grandiflora* will grow, but certainly to something like 95 feet, and there may be specimens even larger than that; so this Magnolia grows into a large forest tree.

The great beauty of the Magnolia, of course, is its flowers, and the fact that many of the known Magnolias are quite hardy, which is not the case with the allied genera. They are very beautiful plants too, but they are tender and confined to the tropical regions of the world.

We will begin our account with the American species, which number seven. The first of these is *M. acuminata*, which is found from New York down to South Carolina. It grows into a big tree of about 70 feet, and is not very popular in this country because its flowers are of a pale greenish yellow and somewhat inconspicuous. There are large plants of it up to 70 feet in the neighbourhood of London, in the nurseries about Woking, and in many private gardens. It has been planted in this country since 1801, but few people care to introduce it now because there are so many better species. It is hardy and deciduous, but there are others which have greater claims to excellence.

M. Fraseri, found only in South Carolina, is still larger. The flowers are about 5 or 6 inches across, but it is a shy flowerer and takes a long time to show its beauty. Even then it is not very attractive. The leaves are good, but it is as a rule somewhat difficult to procure in Europe.

The next species is a very well-known one, namely, *M. glauca*, which is found as far north as Massachusetts and exists in a wild state from Virginia all along the coast, North and South Carolina, Georgia, and Florida. It is rather a slow-growing Magnolia, 40 feet high. It is deciduous in this country, but in Florida it is evergreen. The flowers of *M. glauca* are very sweet-scented and come out in July. It is a very floriferous species and charming to put in vases. The tree is not very attractive, because it becomes

rather gaunt in the main stem and looks somewhat bare; it is not a very well covered plant. There are big plants in the south of England to the height of 45 feet. It was quite a popular Magnolia thirty or forty years ago, but now I do not think many people plant it. A decoction of the flowers is made in America for rheumatism and other things.

M. grandiflora is probably the best known Magnolia in British gardens, and quite as attractive in some ways and as beautiful as *M. conspicua*. *M. grandiflora* ranges from Georgia to Florida, Alabama, Louisiana and east to Texas. In Louisiana it grows in forests up to 90 or 100 feet and is not very beautiful in its wild habitat because all the lower branches fall off, and the flowers are right away at the top of the tree. They look like tiny daisies, they are so far away from the eye. Best of all is to see it in Southern Europe. There are magnificent avenues of these trees in the south of France and in Italy grown as standards. They are clothed from top to bottom with splendid dark green leaves, 8 to 12 inches long, and covered with beautiful flowers in June. The flower is 13 inches across, which is as large as *M. grandiflora* ever grows to. In North America it flowers from the early part of May right till the end of June, in the south of Europe in June, and in England in July, and at intervals right on till the frost comes.

There are a great many varieties of the *M. grandiflora* and it is one of the few Magnolias which have been sent all over the world. It is cultivated in the Botanic Gardens of South China, throughout Japan, where it is sold in large quantities, and is acclimatized in South Africa. I think probably it would do extremely well in New Zealand.

The next American species is one of great importance, *M. macrophylla*. Its range is from North Carolina to middle Florida, through Georgia and Alabama to Eastern Louisiana. It is now a very rare plant, but still found on the eastern side of Louisiana, where it grows in swampy forests. It is a tree of very great beauty, growing 40 feet high, and under the best conditions a great deal more than that. There is one plant near Stresa, Lake Maggiore, which is 70 feet high, and a mass of flowers every summer. The flower of *M. macrophylla* is the largest of any plant outside the tropical regions. The leaves are enormous, ranging from 22 to 30 inches. Mr. WILSON says he has measured them up to 36 inches, but I have never seen anything like that. I have seen a leaf of 30 inches. The flowers are 15 inches across, and although they are not so well filled up as some Magnolias, yet to see the tree covered with these grand flowers is a great sight.

The flowers exhibited to-day I took from the big plant—the only big plant in England—which is at Claremont at Esher, formerly the home of the late DUCHESS OF ALBANY. There is one very fine tree there, 40 feet high and in the best of health. If that tree can be grown at Esher, which is not the very best place in England, and can

be grown to 40 feet high and be in the best of condition, we can surely all grow that plant. I fell in love with it about 30 years ago at Mr. VEITCH's nursery. Every year I used to go and see this wonderful thing in flower. When the Veitch nursery was sold up, I asked if I could buy it. I was just going to move it, when Kew asked for it. They moved it there, but it only lived a few months. Now there are plenty of plants in England. Sir WILLIAM LAWRENCE has one of 14 feet. I have five or six about that size now. In the young state it is very tender and very difficult to move and to get to grow. It hates spring frosts, and may grow very well one year and be put back the next. If you put in a dozen of these Magnolias, the probability is that in ten years you will have two in first-class condition; but we ought all to plant *M. macrophylla*. It can be grown from seed and imported from America, but I am afraid it is rather difficult to get in this country or any other part of Europe.

The next species is not a very interesting one. For a long time it was thought to be only a variety of *M. tripetala*, but it has now been differentiated as a species *M. pyramidata*. It is more or less evergreen. It was introduced to Europe in 1837. I do not know any plants of it in England, so I cannot say very much about it. The flowers are not very good, about 4 or 5 inches across, and rather thin and papery, and not attractive.

The last American species on the main Continent of America is *M. tripetala*. The flowers have a disagreeable smell, but it is a fine Magnolia. It has very big leaves, pointed at each end and not auriculated. The flowers are a little like those of *M. macrophylla*, only more loose, 9 to 10 inches across and rather papery, and they move about in the wind. There are some fine specimens of this species in Sussex, and some even larger ones in the Midlands. It should be planted in every garden because it has so many flowers.

There is one species found in Mexico which is not cultivated here, *M. Shiedeana*. It is evergreen, and evidently one of the numerous Pacific sub-species of *M. grandiflora*.

The same applies to *M. guatemalensis*, which grows to about 24 feet, with smaller white flowers.

Another species is found in Cuba, *M. cubensis*, also evergreen, with flowers not so fine as those of *M. grandiflora*.

In Porto Rico, right out to the east, there are two species. One is *M. portoricensis*, rather like *M. grandiflora*, but the other one is *M. splendens*, which is a magnificent Magnolia. It has flowers quite as big as, if not bigger than, *M. grandiflora*. It has very large leaves, larger than *M. grandiflora*, and the whole plant is covered very densely with these huge glossy green leaves, which it retains both summer and winter.

I believe, coming from Porto Rico, it is quite possible that this Magnolia might be hardy in Devonshire and Cornwall, and someone ought to introduce it.

That concludes the American species of Magnolia.

Now we have the Eastern species, beginning with Japan. The first species found in Japan is up in the island of Hokkaido. That is a sub-Pacific race of the true *M. hypoleuca*. The only two found there are *M. hypoleuca* and *M. Kobus* var. *borealis*. The latter is a northern form of *M. Kobus* found on the mainland, and if it is given a name the northern form of *M. hypoleuca* ought to have a name too as a variety, because the Yedso form of *M. hypoleuca* is a very fine thing. It has larger leaves, about 10 inches long and 4 inches across, than the mainland plant, is deciduous, and grows with great rapidity. In English parks I think it would do as well as chestnuts.

The form of *M. hypoleuca* which JAMES VEITCH introduced something like 60 years ago, and which was first sent out to a garden at Haslemere, is a very inferior form. The superior form from Yedso is very quick growing. I have got it in my garden and it has grown to 25 feet in 13 years and is still growing up fast. Plants are now beginning to flower really well with me, and every year the trees are all covered with beautiful, almost pure white flowers. The natives cut the wood and use it for black and red lacquer. It takes this lacquer in liquid form without any knots or ripples, so you get a perfectly smooth surface. There is no other wood in the world in which you can get so perfectly close a grain.

M. Kobus is an attractive species which grows all through North Japan, and even better in the island of Yedso in the north. It flowers in the beginning of April, is very floriferous and very quick growing. It makes a nice tree of about 20 feet high in 10 years, and is perfectly hardy in all the Home Counties. Anybody can grow *M. Kobus*, and it will grow into a large tree 40 and 50 feet high. The one in the market-place in Newry in Ireland is over 40 feet now and is still growing fast. I think *M. Kobus* would probably be a tree as big as a chestnut in time and, covered with flowers in the spring, it is very attractive. The wood when crushed has a slight scent.

M. salicifolia is a species very closely allied to it. There are two forms. The best form has wide-spreading branches, and very highly scented wood, leaf and bark. The other form, introduced later, is the common one in England. It is like a bundle and the shoots go straight up. The result is that, although the plant is a beautiful one, it is not nearly so attractive as the true species which has such delightfully scented flowers and leaves.

A very extraordinary thing about the Japanese, who are such keen tradesmen and always anxious to make money in every possible way, is that they have been sending to Europe now for roughly a century or two and have done a great trade with Europe, particularly with Holland, Germany, France and ourselves, and you would think they would send all their good things and reproduce them freely and make as much money as possible. Not a bit of it. They have still a lot of things there which are better than any they have sent us. This is one of them. They regard their gems as a sort of national possession.

M. parviflora is a common species in Central Japan. There is another form of it in Korea which is even better. It grows all along the sides of streams. Very few people in this country have any idea of what it is, because they have never seen a big one. When you begin to see a big plant of it, you will understand why people pour eulogisms upon it, because the flowers are very beautiful, and they cover the whole bush or small tree at different seasons. This is practically the only Magnolia which goes on for a long time and puts out its flowers in sections. I have an old plant in my garden from Korea which I have had about 15 years. I think it is about the biggest plant in England and, although it is only 15 years old, it is about 25 feet high, and every year it puts forth a couple of hundred flowers in the beginning of May, perhaps three hundred in June, and in July it will have another two hundred. That is a pretty good plant. It will give you three months' flowering season with beautiful flowers all over.

A hybrid named *M. Watsonii* is known in Japan. A great many people claim to have made hybrids, and I dare say one or two people have. Mr. VEITCH has made a hybrid between *M. conspicua* and *M. Campbelli*, but I think the majority of hybrids that have occurred are natural ones. In a great many cases the stamens with the pollen on fall off the very day they expand, and you wonder how they fertilize at all.

M. Watsonii was sent to the 1851 Exhibition in Hyde Park. It created quite a sensation, and everybody thought it was a species. It came from Japan, and people have sought it there, but nothing like it has ever been found wild and there is very little doubt that it is a natural hybrid.

M. stellata grows into a nice bush, as a rule, of 6 to 10 feet. I have measured it up to 15 feet in Cornwall, but it seldom gets up to more than 10 to 15 feet. It should be in every garden. The flowers are so beautiful.

The late Mr. MESSZEL planted a group of about sixty plants, all now about 10 feet high. He did not know very much about the shrub, and so thought that he would put them 2 or 3 feet apart. Every one grew enormously, and now there is a perfect jungle of *M. stellata*. Five plants would have done what sixty are doing now.

Now we have finished with the Japanese and Korean species, and come down to the main Continent of China. There are no Magnolias until one reaches Hupeh and Szechwan; there they begin and extend into India and Burma, Siam, French Indo-China, the Malay Peninsula, Sumatra, Borneo and Java. Outside that there are no other

The first Magnolia I want to talk about is *M. aulacosperma*, found in Western Hupeh by WILSON. It is like *M. salicifolia*. It has nine petals instead of six. We have no particular interest in it at present.

Another species is a small one called *M. Coco*, which is too

tender for cultivation in this country. It grows along the south coast of China. It is cultivated by the Chinese because of its delightful scent. It blossoms as a rule at night and grows into a small shrub about 4 to 6 feet, and is very popular in the gardens of the Chinese. I think you will see it occasionally in greenhouses in this country, but it is never seen out of doors.

The next species is *M. Dawsoniana*. It is very closely allied to *M. conspicua*, and unfortunately has only been introduced to this country by grafted plants, so it is doing very badly.

M. Delavayi grows about 40 feet high and about 30 feet round. It has been in England about 20 years and flowers regularly every July. The fault of this Magnolia may be said to be its poor flowers. They are not very good even when they are at their best, which is only for about six hours, and they fade the same day that they come out. Mr. WILLIAMS says that where it has become big and the whole plant is absolutely covered with flowers for a day or two, it is a very attractive sight, and I have no doubt he is correct, as he is such a very good judge. It is not very hardy. It can be grown in the west as a standard in the open, but beyond the fact that its leaves are very beautiful it is hardly worth putting in our gardens.

The Yulan was known to the Chinese just after the time of Christ, and is on their old pottery. Old books make reference to the Yulan. The Chinese interchanged it in the fourteenth century with the Japanese and got their Camellias and Azaleas. It is cultivated everywhere throughout Central China. Oddly enough, although we consider white flowers the type, Mr. WILSON told me that in a wild state wherever this species grows the majority are purple. It is rather curious that a plant introduced here by Sir JOSEPH BANKS was a white one, and it is certainly a good flowering one. *M. Yulan* was introduced about 1800, and it is therefore now over a hundred years old.

This Magnolia is almost the only one which opens its flowers quite flat when the sun comes upon it first. As a rule *M. Yulan* has its flowers rather cup-shaped, but not upon a sunny day.

Anybody can grow *M. Yulan*. It is a very great pity, when there are such beautiful things available to us now, that we do not put in more. You never see fine effects unless it is an old garden, in which some people of taste have seen fit to plant a few Magnolias. Planters put in hideous trees, but very seldom do they plant Magnolias. Why cannot they see the beauty of this tree, which is 40 feet high and has 5,000 flowers out at once? Why do they not put that in? They will not, because they think it is delicate or some nonsense of that sort. It is not in the least delicate.

There is a big plant at Woking that has been there a hundred years. It is in Mr. SLOCOCK's nurseries and is roughly 30 feet high, 35 feet across, and 35 feet round.

I will leave out the Chinese Magnolias in cultivation like *M. mollicomata* and *M. Nicholsoniana* and so on, which are very rare plants

but one thing which is absolutely first-class is *M. rostrata*. There are thirty or forty now put out into English gardens, and in time we shall see one of the most magnificent plants in the world. Its great advantage over *M. Campbellii* is that it flowers in May instead of in February. *M. Campbellii* is a fairly hardy plant, but it flowers so early and it takes so very many years before it flowers that it really rather breaks your heart before you ever see it. You think it is going to flower every year. Then at last after 30 years it does flower, then comes a frost, and good-bye to everything. But *M. rostrata* is a beautiful plant, with large fine leaves and beautiful flowers.

Before leaving the Chinese Magnolias it is well to mention *M. Sargentiana*, which is likely to prove a fine tree even in these islands, and one of the highest beauty. It seems to be quite hardy in the South of England where there are a few plants now up to 13 feet. Its flowers are somewhat similar to *M. Campbellii*, but produced later in the year, whilst the leaves are smaller and more acute. Burmese and Indian Magnolias, as well as those of Malaya and the adjacent islands, are for the most part too tender for cultivation in our islands. *M. globosa* may be a success in Cornwall, whilst *M. Campbellii* is a proud favourite in the counties south and west of London. It succeeds very well in all parts of Ireland where it has been planted.

AWARDS OF GARDEN MERIT.—XII.*

88. ANEMONE BLANDA.

Award of Garden Merit, January 23, 1927.

ANEMONES are beautiful flowers too little seen in gardens, yet always appreciated by lovers of beauty when they can be seen. Some have a flaunting loveliness, a few even a tendency to gaudiness (but rarely to vulgarity); others display a delicate brightness of colouring in keeping with the woodland recesses they seek. Some are of stately habit, others meekly gracious. A few are of no account—but they are very few. Anemones, though, are not as a rule for the gardener who cannot leave things alone. Most of them have no part nor lot in bedding-out schemes. They ask for quiet peace so that they may spread by their running roots, or make a goodly tuft, and by and by give of their generosity more than enough to justify their occupation. Some are difficult to grow, or at home only in peculiar soils, but *Anemone blanda* is not one of the most difficult. It likes a moist (not wet) leaf soil in sandy loam, sheltered, and in spring, sun (but needs little of sun in summer); and it flowers earlier than most Anemones, coming into flower generally in January or February along with *Narcissus cyclamineus* (but not wanting so damp a spot as that does best in). So planted its blue flowers nearly two inches across are in the winter sunshine very fair to see. It grows only six inches in height and has leaves not unlike our wood anemone, triternate and with deep-lobed segments, and also like our wood anemone it has three deeply cut leaves, stalked a little way below the flower. As do so many of its family it varies in colour, and while the typical plant is blue inside and out, both pink and wholly white forms are known, and there are double forms as well, but the most beautiful, and perhaps the most easy to suit, is *A. blanda scythinica*, a little later than the type, with flowers blue outside and pure white within—a lovely thing and one withal that will seed about and come nearly true.

Anemone apennina is nearly related, but has smaller flowers, likes better perhaps the wood, and is perhaps easier to accommodate. It flowers later and differs in the form of its pinnate leaves.

89. ANEMONE PULSATILLA.

Award of Garden Merit, April 4, 1927.

As known in gardens at least *Anemone Pulsatilla* is very difficult to define, and we must wait Mr. BOWLES' promised book of Anemones for light; all we can do for the moment is to comment upon the species in the wide sense.

* For earlier annotated lists see vols. 47, p. 189; 48, pp. 58 and 223; 49, p. 233; 50, pp. 100 and 260; 51, pp. 84 and 337; 52, pp. 82 and 254; 53, p. 110.

Anemone Pulsatilla makes a tufted growth of many deeply divided pinnatifid leaves from among which in April rise many stalked flowers to a height of about nine inches, generally violet, and sub-erect, with six spreading sepals silky outside. It is variable in colour and size and in the shape of the flower, and while it may be said that all forms are handsome, it would repay for the trouble of picking out the best from a number of seedlings. The roots are fibrous, not tuberous, like so many Anemones, and the plant is at home in a fairly dry situation on well-drained limestone soil, and so a high place on the rock garden suits it. It is worth a place there both for its handsome growth and flower, and for its feathery fruits, by the sowing of which as soon as ripe it is easily increased. Though this is the normal and recognized spot for it, yet we have seen it growing and thriving and equally handsome in moist grass, as it used to be in Mr. WILKS' garden at Shirley, so that no invariable prescription can be given for its requirements—only it is worthy of a place anywhere where spring flowers are valued.

Many varieties have been named, some of wild origin, some raised in gardens, but that called 'Mrs. van der Elst' is perhaps the most beautiful.

90. SPIRAEA \times ARGUTA.

Award of Garden Merit, May 9, 1927.

There are some among garden lovers of no mean eminence who exclaim against the admission of hybrids into gardens. They will quote you many examples of demerit among them, and point to their lack of refinement, or to some other characteristic which they inferentially bid you to observe as true of all hybrids and fit reason for their exclusion from the company of the elect. Doubtless it is true that many plants raised by crossing or otherwise in gardens lack that subtle charm which many a wild species may possess, but doubtless it is also true that others of that company show no such lack. Indeed if we knew the whole history of our wild species we might well find that their present variety, their whole beauty, and everything about them that so appeals to us had its origin in hybridity. This is not the place or time to dilate upon this theme, but it is the place, for the subject of our note is a hybrid, to plead for the admission of any plant of beauty into our gardens, no matter what its ancestry. No one seeing *Spiraea \times arguta* in flower for the first time, and knowing nothing of its parentage, would deny its claim to a place; for in it beauty, refinement, hardiness, and freedom are combined. That great lover of trees and shrubs, learned in their uses and variety, and not over ready to praise when writing of them, Mr. W. J. BEAN, says of it: "the most beautiful of the spring-flowering Spiraeas," and that from such a source is the highest praise. It will grow in any soil not a marsh, will produce its slender branches

6 or 12 inches long every year, every year covered with flower buds, so that at the end of April or beginning of May the whole bush, perhaps 6 or 8 feet high and as much through, is wreathed in small pure white flowers. It flowers between two other good white-flowered Spiraeas, *S. Thunbergii* and *S. × Van Houttei* (another excellent hybrid). There seems some doubt as to the parentage of *S. × arguta*, for the *Gärten-Zeitung* for 1884, p. 494, where ZABEL first described it, gives it as *S. media* × *S. multiflora*, the latter itself a hybrid between *S. crenata* and *S. hypericifolia*. Others regard *S. Thunbergii* as one of the parents, and they are probably correct. There is a figure (too bunched up though for the reality) in the *Gard. Chron.*, ser. iii, 22, p. 3.

91. ASTILBE × ARENDSII.

Award of Garden Merit, August 8, 1927.

Our gardens even now owe a debt to HERR ARENDS of Ronsdorf for his work in raising the hybrid race of Astilbes that bears his name, and as they become better known that debt is likely to be greatly increased. They are plants for moist and half-shady places, and though in some varieties the colours are rather crude (for they are derived in part from that crude magenta-flowered species, *A. Davidi*) in most the harshness is toned down by the introduction of *A. japonica* (so often called in English gardens *Spiraea japonica* and forced for early flowering in pots—hardy enough but apt to have its flowers cut by May frosts). Other species have also been crossed with *A. Davidi* to produce the race, viz. *A. astilboides*, *A. chinensis*, and *A. Thunbergii*. Planted in half shade the green surrounding it takes off any slight crudity of colouring and may turn it into a charming picture; but lest this note be taken to condemn, it must be emphasized that most varieties are pink, and cream, or even snow-white, and offensive to not even the most magenta-hating eye. There are two races, one flowering in July and August to be commended for the open garden, the other in June and apt to be cut by late frosts, therefore better fitted for cultivation in the greenhouse, like *A. japonica*. There are very many varieties and we may name a few: 'Ceres' (A.M. 1908), lilac rose; 'Pink Pearl' (A.M. 1908), coral pink; 'Gloria,' bright rose with lilac sheen; 'Rubin,' bright carmine; 'Granat' (often deemed the best), bright carmine; 'Diamant,' pure white; 'Amethyst,' violet purple; 'Hanna Stodt,' rose carmine; and there are many more in catalogues that should be in many more gardens. The two well-known Astilbes, 'Peach Blossom' and 'Queen Alexandra,' resulted from a cross between *A. chinensis* (which is nearly related to *A. Thunbergii*) and *A. japonica*, to which the name *A. × rosea* has been given. This race was also raised by HERR ARENDS. The first varieties of the race of *A. × Arendsii* are described in Möller's *Deutsche Gärten-Zeitung*, 1907, p. 546.

92. SCHIZOSTYLIS COCCINEA.

Award of Garden Merit, October 31, 1927.

One of the most noticeable characteristics of the S. African flora is the large number of plants which pass the dry season as dormant bulbs or corms. Most of them are unfortunately not quite hardy in this country, but *Schizostylis coccinea* rarely suffers and is a valuable inmate of our gardens for the brilliant red of its flowers, and because it produces them mainly from September to November. We have termed it hardy, and so it is if it be given a place on a warm border or sunny spot on the rock garden and planted in sandy loam mixed with leaf soil, but in unsuitable places and abnormally severe winters it is liable to be killed out. Its sheathing narrow leaves rising from a small bulbous base (or from the rhizome without a bulb) are of a pleasant green and the spike produces ten to fifteen bright red flowers, 2 inches across. It is figured in the *Bot. Mag.* t. 5422.

93. COTONEASTER ROTUNDIFOLIA.

Award of Garden Merit, October 31, 1927.

The genus *Cotoneaster* has given us many beautiful shrubs, and *C. rotundifolia* is among the best of the small ones, not too large for the small garden of choice shrubs. It forms a low shrub, the plants at Wisley being no more than 3 feet in height, with many branches rising from the base at an angle of about 60° and making a very shapely spreading plant. Its small leaves are nearly evergreen in most winters and its round fruits, bright scarlet from October to April, are rarely touched by birds. It was introduced many years ago from Northern India, but our plants were raised from seed collected farther east on the Tibetan border. It is a worthy fellow of the more spreading *C. horizontalis* and the taller *C. frigida*, and more shapely and fruitful than the excellent *C. Simmondsii*.

94. PRUNUS CERASIFERA VAR. PISSARTII.

Award of Garden Merit, March 13, 1928.

In 1880 M. PISSART, head gardener to the Shah of Persia, noticed a purple-leaved plum which he sent to France and which was quickly distributed over Europe. M. CARRIÈRE described it in 1881 and named it *Prunus Pissardii* by which name it is still commonly known, and later writers recognized in it a form of *Prunus cerasifera*, naming it *P. Myrobalana* f. *Pissardii* (*P. Myrobalana* being the more vigorous variety of *P. cerasifera*, and often called the Cherry-plum) and *P. cerasifera* v. *atropurpurea*, under all of which names it appears in catalogues.

It forms a fine and shapely small tree with a rounded head and, as it ages, a deeply fissured trunk. One of the largest in this country, planted soon after its introduction, is in the Wisley Garden. It measures 33 feet 4 inches in height, and 26 feet in spread of branches, the trunk at 5 feet having a girth of 4 feet.

It has a double claim to a place in our gardens, whether the garden be small or large. First, on account of its flowers, freely produced in February and March, singly or in twos or threes, from the buds of last year's shoots and from spurs, white, but appearing pink because of the ruby calyx in which the petals are set and about $\frac{1}{2}$ to 1 inch in diameter. Secondly, on account of the ruby-tinted young foliage, appearing with the flowers and darkening as it ages until finally it is a dull purple. The round fruits are not freely produced though our tree bears a few nearly every year, but they too are purplish, about an inch long. Seedlings have been raised and many come nearly true, so that they have been distributed under the same name and there are several such at Wisley. The original tree, however, has the best coloured foliage and as it is easily raised from cuttings and may be budded, care ought to be taken to propagate the best forms.

Several seedlings have been named: for instance, var. *pendula* with drooping shoots; var. *angustifolia*, with narrow leaves; var. *gracilis* with long narrow groups of branches (sometimes called var. *elegans*, but that name has also been applied to a variety with narrow leaves edged with white, called in some catalogues 'Louis Asselin'); var. *Woodii* with darker foliage and more tinted flowers than the type, and the still darker (and possibly more worth growing variety because more distinct) var. *nigra*. Double-flowered varieties have also arisen and one of them is

95. PRUNUS CERASIFERA VAR. BLIREIANA.

Award of Garden Merit, March 13, 1928.

This has purple foliage and bright rose flowers, but in our experience is neither so vigorous nor so free in flower as its parent. It is, however, a desirable bush or small tree for any garden, and the var. *Moseri* is another of similar type with flowers of a very beautiful tint and dark purple leaves.

96. BERBERIS THUNBERGII.

Award of Garden Merit, October 31, 1927.

Berberis Thunbergii is a deciduous species bush, tangled and rounded, of about 3 to 4 feet in height, and as much through, not at all unsightly in the winter; pleasant to see with its pale green young foliage and hanging solitary sulphur flowers with a tinge of red in spring; and one of the most brilliant of low bushes in its scarlet berries and foliage in autumn. It will thrive in almost any position in the garden, and does not object to slight shade. It is easily raised from seed. The smooth, reddish stems, deeply grooved, the closely

set tufts of small, obovate, entire, sometimes spine-tipped leaves, and the usually single spines distinguish this species from most others, though it has given rise to a few varieties differing mainly in habit, to which names have been given. It was described long ago by Thunberg, who saw it in Japan, introduced to European gardens about 1874, and has been found wild also in China. It is now widely spread and highly valued in England, on the Continent, and in North America, where it seems to grow to a larger size and is almost too common. There is a pretty purple-leaved variety which has arisen as a seedling variation recently, and which, like the type, is perfectly hardy in our climate.

97. ERIGERON MACRANTHUS.

Award of Garden Merit, October 5, 1925.

Messrs. Cutbush obtained an Award of Merit for *Erigeron macranthus* when they showed it at Vincent Square on June 22, 1909, under the name of '*Aster mesa grandiflora*,' a name still used for it in some catalogues but erroneous and quite unnecessary now the proper name has been determined. The plant is native in the Rocky Mountains from Wyoming to New Mexico and in S.-W. Utah. It is perfectly hardy, perennial, grows about 24 inches in height, and bears its soft lavender-blue flowers each about 2 inches across in profusion without special cultivation from midsummer onwards. There is a figure (reproduced from the *Gard. Chron.* 46 p. 53 (1909)) in our JOURNAL, 35, p. cxlv., and a woodcut in the *Garden*, 42, p. 484 (1897). The plant seems to have been distributed by M. FRANÇOIS GERBEAUX, in whose nursery it is said to have been raised, and it there acquired the erroneous name we have quoted because it was believed to be a hybrid of an *Aster* and an *Erigeron*, but it is a true *Erigeron* and does not differ from *E. macranthus* as described by NUTTALL, and it is no doubt a seedling form of that species.

98. LABURNUM × VOSSII.

Award of Garden Merit, March 13, 1928.

Laburnums come into flower about the same time as the thorns, and their golden-yellow harmonizes well with the scarlet of the best of the coloured thorns. The common Laburnum (*L. vulgare*) is first, and about a fortnight later the 'Scotch' Laburnum (*L. alpinum*) follows, carrying the flowering period into June. The more compact habit, and more glossy foliage of *L. alpinum*, combined with its longer racemes, make it the better tree for gardens, and where one only can be grown it would be better to choose this. Both species have given rise to varieties, differing somewhat in habit, and especially in the shape of the foliage and length of the raceme, and in addition, hybrids between the two species occur and *L. × Vossii* is one of these, approaching perhaps nearer to the *L. alpinum* parent than to *L. vulgare*. The form to which the award has been made has the longest racemes of any,

and is a most desirable small tree. The Laburnums call for no very special soil or situation, but are at their best grouped in small colonies with a background of evergreens against which their bright yellow flowers show up very beautifully, and the long hanging clusters of flowers of *L. × Vossii* will prove a joy there for many years if attention is given to the removal of any seed pods that may be formed and to the slight amount of pruning that the shaping of the tree calls for.

99. *QUERCUS COCCINEA SPLENDENS.*

Award of Garden Merit, Jan. 23, 1927.

Sufficient attention is rarely paid to the selection of trees and shrubs for their beauty in autumn. It is no difficult task in well-drained soils to plant so that autumn and winter effects are as beautiful in their way as summer, though perhaps less gaudy, and no tree more regularly or more conspicuously contributes to this beauty from mid October to December than *Quercus coccinea*, especially in its best form *splendens*, called also in catalogues *Quercus americana splendens* and *Q. coccinea* Knaphill var.

This American tree will eventually attain a large size if it has room to develop, but it is not very fast growing when young, and has a mode of branching and a bark quite distinct from our British oak. Its lustrous green-lobed leaves are not unpleasing in summer, but its value lies in the brilliance of its autumn leaves, which remain after becoming brilliant red, for weeks in beauty. Occasionally severe frosts may come in early October and rob it of some of its brilliance and the foliage then becomes brown-red instead of scarlet, but even then is pleasing.

100. *CYDONIA JAPONICA.*

Award of Garden Merit, April 4, 1927.

No plant is better known than this, nor is any "Latin name" more familiar, for everyone hails with delight the scarlet or blood-red flowers of "japonica" when they come in spring, as come they do every March (or even February) and stay more or less abundantly until June.

Frequently called by its older name, *Pyrus japonica*, the Japanese Quince is as widely planted as any hardy flowering shrub, yet many think that only on a wall will it give of its beauty.

Possibly it flowers most freely on a south wall, but it will do almost equally well in a sunny, sheltered spot on a lawn, grown as a bush, and look better than on a wall. Any well-drained soil will suit it, and it does not suffer when pruned, but when pruning is undertaken it should be remembered that the flowers are borne in clusters on the old wood, and that over thinning reduces the charm of its dense interlacing growth as seen in winter.

The fruit set close to the branch, greenish, yellow speckled all over with tiny spots, is very aromatic, and, picked in October when ripe, makes excellent quince jelly.

ANNUAL POPPIES AT WISLEY, 1927.

ONE hundred and ninety-three stocks of seed of Poppies were sown on March 10, 1927, in rows 9 inches apart in the open on well-prepared ground, the seedlings being thinned to about the same distance between as soon as large enough. These stocks included many which came from various parts of the world under different specific names and which proved incapable of germination or to be wrongly named, and these are not mentioned further. The seeds from various seed houses, on the other hand, usually germinated freely and proved, with a few exceptions, true to the groups to which they purported to belong, although not always free from admixture with related varieties, as will be seen in the notes which follow.

The plants were examined on various occasions by the Floral Committee and final judgment passed on July 7, 1927, when the awards set out below were recommended.

The varieties judged are arranged into groups under

- A. *Papaver somniferum* (the Opium Poppy), with large, glaucous foliage and very large single or double flowers.
- B. *Papaver Rhoeas* (the Field Poppy), with hairy-green foliage and smaller, but more numerous, flowers with or without a black blotch at the centre. The Shirley varieties have pale stamens and no blotch, and are of various shades of scarlet, orange, pink, slatey blue and white, both in single and double forms.
- C. *Papaver nudicaule* (Iceland Poppy), with grey foliage in a rosette from which rise the naked-stalked flowers of various shades from white to orange.
- D. Various species of differing habit.

The earliest Poppies to flower were the Ryburgh Hybrid *Papaver Rhoeas*, which were in bloom by May 23. These, however, differed from all the rest of the trial in having been sown in autumn, sent to Wisley through the post, and planted out as young plants in January, and transplanted again in March, 1927. Poppies are notoriously difficult to transplant, but these plants did not suffer in the least and flowered over a longer period than any. *P. apulum*, a charming annual very little known, commenced flowering on May 26, soon followed by the better known 'Peacock Poppy,' *P. pavoninum*. These were a month in advance of the *P. Rhoeas* and *P. nudicaule* varieties, most of which commenced to flower about June 24, when *P. glaucum* (the 'Tulip Poppy') also flowered. A week later came *P. umbrosum*, *P. commutatum*, and the earliest of the *P. somniferum* varieties (mainly the double scarlet forms), followed a little later by the remainder of the *somniferum* varieties, *P. arenarium*, and *P. aculeatum*.

Considerable interest naturally centres round the forms of *Papaver Rhoeas*, since the well-known Shirley strain originated with and was

perfected by the late Secretary of the Royal Horticultural Society in his Shirley garden. The story of his work has been told elsewhere and need not be repeated. His were not the first variations of *P. Rhoeas* to be selected and grown, for Weinmann's "Phytanthoza iconographia," published in 1737, shows coloured figures of practically all the variations we know, both single and double, under the name of *Papaver erraticum*; but to him belongs the credit of resuscitating the race and of selecting and reselecting the cleanest and most delicate colours, so that a very charming race of mixed shades became available for our gardens. This race we have tried to maintain at Wisley since his death, and it was represented in the trials. It contains no doubles, no flowers with a trace of black in the petals or the stamens, nor any with grey or bluish shades. Others have selected along different lines, but the name 'Shirley' really belongs to the strain with which Mr. Wilks' name is associated. A curious and very distinct and apparently fixed race, 'Little Gem,' was sent by Messrs. Watkins & Simpson. It forms very compact plants only half the height of the normal. It apparently originated in Denmark and was sold there as *P. Rhoeas pumilum*.

In the varieties of *Papaver somniferum* several groups may be distinguished according to the form of the flower, and while many (like Mr. Wilks) cannot tolerate the double forms of the Field Poppy, both single and double forms of *P. somniferum* are welcomed on account of their stiff habit and vigorous growth, fitting their opulence of size and colour. The most marked distinctions, beyond the colour variations, are found in the petal margins, which may be entire (giving the double 'Pæony-flowered' varieties) or more or less finely laciniate (giving the double Carnation and Cardinal varieties); these variations are found in both the single and double forms.

The Iceland Poppy has recently had its range of colours extended by the introduction of the Sunbeam and Coonara strains. The latter was raised in Australia by Mrs. J. S. Oliver of Coonara, Essendon, Victoria, and is said to have originated in a cross between the orange shade of Shirley Poppy and the Iceland Poppy.

The value of the Poppy in the garden is increased by autumn sowing, for so the season of flowering is lengthened, and it may be further lengthened by picking off the flowers as soon as past so as to prevent seed production. Failing autumn sowing, sowing in February as soon as a tilth can be obtained is better than delaying until later, and, above all, early and thorough thinning of the seedlings conduces to good results.

AWARDS, DESCRIPTIONS AND NOTES.

A. *Papaver somniferum* Group.

1. FLOWERS SINGLE.

(a) *Whits.*

AWARD.

The Bride, A.M. July 7, 1927. Sent by Messrs. W. H. Simpson, Birmingham.

THE BRIDE (W. H. Simpson), A.M.—4 feet; flowers 7 inches diameter, white.

(b) Pink.

AWARD.

Miss Sherwood, A.M. July 7, 1927. Raised by Messrs. Hurst and sent by Messrs. Barr, King St., Covent Garden, W.C.

MISS SHERWOOD (Barr), A.M.—4½ feet; flowers 5 to 5½ inches diameter, shell pink, base of petals white.

(c) Rosy-mauve.

DAINTY LADY (Barr).—3½ feet; flowers 4 inches diameter, pale rosy-mauve, base of petals dark purple; variable in shade.

(d) Scarlet and White.

AWARD.

The Admiral, H.C. July 7, 1927. Sent by Messrs. Heinemann, Erfurt, Germany.

THE ADMIRAL (Heinemann), H.C.—4 to 4½ feet; flowers 4 to 5 inches diameter, bright vermillion, base of petals white.

THE ADMIRAL (R. Veitch, Barr, Dobbie).—Mixed stocks of the last.

DANNEBROG (Daehnfeldt & Jensen, Barr, Heinemann).—Characters as 'The Admiral.' Stocks mixed.

(e) Purple.

AWARD.

Charles Darwin, H.C. July 7, 1927. Sent by Messrs. Barr.

HANSA (Heinemann).—4½ feet; flowers 4½ to 5 inches diameter, purplish-carmine, base of petals white, coarsely fringed. White and pink rogues.

BLACK PRINCE (Barr, Heinemann).—4 feet; flowers 4 to 4½ inches diameter, coarsely fringed, purplish-maroon. Scarlet and maroon rogues.

CHARLES DARWIN (Barr), H.C.—4 feet; flowers 4 to 4½ inches diameter, dark rich plum-purple.

(f) Mixed shades.

VIRGINIAN POPPY (Heinemann).—4 to 4½ feet; flowers 4 to 5 inches diameter.

2. FLOWERS DOUBLE.

(a) White.

AWARDS.

Snowball, A.M. July 7, 1927. Sent by Messrs. W. H. Simpson.

White, } H.C. July 7, 1927. { Sent by Messrs. Heinemann.

Cardinal White, } { Sent by Messrs. Dobbie, Edinburgh.

May Campbell, } { Raised by Messrs. Hurst and sent by

White Swan, } H.C. July 7, 1927. { Messrs. Barr.

White Swan, } { Sent by Messrs. Barr.

SNOWBALL (W. H. Simpson), A.M.—2½ feet; flowers 4½ to 5 inches diameter, white.

WHITE (Heinemann),

CARDINAL WHITE (Dobbie) } H.C.—4½ feet; flowers 4 to 4½ inches diameter, finely fringed, white.

MAY CAMPBELL

WHITE SWAN } (Barr), H.C.—3 feet; flowers 4½ to 5 inches diameter, finely fringed, white.

WHITE SWAN (Dobbie).—Like the last.

DOUBLE WHITE (Daehnfeldt & Jensen).—2½ feet; flowers 4½ to 5 inches diameter, finely fringed, white.

CARDINAL WHITE (Dawkins).—3 feet; flowers 4½ inches diameter, creamy-white, coarsely fringed.

WHITE DOUBLE PEONY (Daehnfeldt & Jensen).—3 feet; flowers 5 inches diameter, creamy-white.

WHITE COLOSSAL (Barr).—Like 'White Double Peony.'

(b) Pink.

MUNSTEAD CREAM PINK (Carter).—3 feet; flowers 5 inches diameter, pale rose-pink on pale cream, base of petals creamy-white. Single rogues.

DWARF DOUBLE PÆONY-FLOWERED SALMON-PINK (Dawkins).—2 feet; flowers 4 inches diameter, flesh-pink. Germination poor.

DOUBLE PÆONY-FLOWERED SHRIMP PINK (Dawkins).—3½ feet; flowers 4½ inches diameter, bright rose-pink.

DWARF CARNATION BRILLIANT ROSE (Dawkins).—3½ feet; flowers 4½ inches diameter, pale pink, finely fringed. Red and single pink rogues.

CARDINAL BLUSH (Dobbie).—3½ feet; flowers 4½ inches diameter, deep pink, finely fringed. Single white and rose rogues.

(c) Rose.

CHAMOIS ROSE (Watkins & Simpson).—3 feet; flowers 5 inches diameter, finely fringed, bright pale rose-dorée, tips shaded chamois.

ROSE (Daehnfeldt & Jensen).—Like 'Chamois Rose.'

CARDINAL CHAMOIS (Dobbie).—4 feet; flowers 4½ inches diameter, finely fringed, carmine, tips shaded chamois. Single pink rogues.

CARNATION SALMON-PINK (Dawkins).—3½ feet; flowers 4½ inches diameter, finely fringed, bright rose-dorée.

SOFT PINK (Heinemann).—3½ feet; flowers 4 to 4½ inches diameter, salmon-rose on cream, finely fringed. Double white rogues and variable in shade.

TAPLOW PINK (Barr).—3 feet; flowers 4½ to 5 inches diameter, bright rose dorée.

ROSE BRILLIANT (Barr).—Like 'Taplow Pink.'

DWARF DOUBLE PÆONY-FLOWERED ROSE (Dawkins).—3½ feet; flowers 4½ inches diameter, bright rosy-carmine. Lilac-mauve and red rogues.

SEMI-DOUBLE PÆONY-FLOWERED SALMON (Dawkins).—3½ feet; flowers 4½ inches diameter, bright rosy-carmine, base purplish. Single carmine and purple rogues.

VIVID CARMINE AND WHITE (Heinemann).—4 feet; flowers 4 to 4½ inches diameter, bright rose on white. Single rose and white rogues.

IRRESISTIBLE (Barr).—3½ feet; flowers 4½ to 5 inches diameter, bright rose. Single rose rogues.

(d) Salmon.

CARNATION SALMON ROSE (Dawkins).—3½ feet; flowers 4½ inches diameter, finely fringed, rich salmon. Purple, red, white and carmine rogues.

(e) Reddish-carmine.

THE MIKADO (Barr, Dobbie).—3½ feet; flowers 5 inches diameter, finely fringed, creamy-white, margins dull reddish-carmine. Mixed stocks.

(f) Lilac.

AWARD.

Bright Lilac, A.M. July 7, 1927. Sent by Messrs. Carter, Raynes Park, S.W.

BRIGHT LILAC (Carter), A.M.—3½ feet; flowers 4½ inches diameter, bright lilac.

(g) Scarlet.

AWARDS.

PÆONY-FLOWERED SCARLET, H.C. July 7, 1927. Sent by Messrs. J. Carter.

CARDINAL, H.C. July 7, 1927. Sent by Messrs. W. H. Simpson.

FIREBALL (Barr, W. H. Simpson).—2½ feet; flowers 4 to 4½ inches diameter, vermillion, middle white streak on each petal. Pink, red and purple, and white single rogues.

SCARLET KING (Barr).—38 inches; flowers 4½ inches diameter, bright vermillion, petals streaked white at middle. Single rogues.

SCARLET (Daehnfeldt & Jensen).—Like 'Scarlet King.'

PÆONY-FLOWERED SCARLET (Carter), H.C.—Like 'Scarlet King.'

CARDINAL (W. H. Simpson), H.C.—3 feet; flowers 4½ inches diameter, bright vermillion, middle of each petal streaked white, finely fringed.

CARDINAL (R. Veitch, Dawkins).—Like the last but less good stocks.

CARDINAL SCARLET (Dobbie).—Like 'Cardinal' but a mixed stock.

SCARLET AND WHITE (Heinemann).—Like 'Cardinal' but contained single pink and red and double red and purple rogues.

CINNABAR SCARLET (Heinemann).—Characters as 'Cardinal' but petals coarsely fringed.

SALMON ROSE (Heinemann).—4 feet; flowers 4 to 4½ inches diameter, finely fringed, scarlet, base white. Scarlet and purple rogues.

(h) *Purplish-maroon.*

NUBIAN PRINCE (Barr).—3½ to 4 feet; flowers 4½ inches diameter, deep purplish-maroon, finely fringed. Single red and purple rogues.

DARK HELIOTROPE VIOLET (Heinemann).—Like 'Nubian Prince.' Red and purple rogues.

(i) *Mixed.*

PEONY-FLOWERED MIXED (W. H. Simpson).—2½ feet; flowers 4 to 4½ inches diameter, mostly white and vermillion.

CARNATION MIXED (W. H. Simpson).—3 feet; flowers 4 to 4½ inches diameter, mostly white, vermillion, rose-dorée and chamois.

GIANT PEONY-FLOWERED MIXED (Barr).—3½ feet; flowers 4½ to 5 inches diameter, white, lilac, scarlet and purple shades.

GIANT CARNATION-FLOWERED MIXED (Barr).—3½ to 4 feet; flowers 4 to 4½ inches diameter, white, lilac and scarlet shades.

B. *Papaver Rhoeas* Group.

1. FLOWERS SINGLE.

(a) *White edged pink.*

AWARDS.

PICOTEE, A.M. July 7, 1927. Sent by Messrs. Barr, Watkins & Simpson, Drury Lane, Covent Garden, W.C.

SNOW QUEEN, H.C. July 7, 1927. Introduced and sent by Messrs. Barr.

SNOW QUEEN (Barr), H.C.—2½ feet; flowers 3½ inches diameter, creamy-white opening to white edged pink.

PICOTEE (Barr, Watkins & Simpson), A.M.—2½ feet; flowers 3½ to 4 inches diameter, creamy white, edged rosy-scarlet, margins wavy.

PICOTEE (Dawkins).—Like the last.

(b) *Rose.*

AWARD.

DEEP PINK, H.C. July 7, 1927. Sent by Messrs. Watkins & Simpson.

LITTLE GEM (Barr, Watkins & Simpson).—14 to 16 inches; habit very compact; flowers 3 to 3½ inches diameter, bright soft rose.

DEEP APRICOT (Dawkins).—2½ feet; flowers 3½ to 4 inches diameter, pale rose-pink. A good even stock.

DEEP PINK (Watkins & Simpson), H.C.—2½ feet; flowers 4 inches diameter, bright rose.

WILD ROSE PINK (Waller-Franklin).—Like 'Deep Pink.' Salmon rogues.

WILD ROSE (Barr).—Near 'Deep Pink' but an irregular stock.

(c) *Salmon.*

AWARD.

SALMON-ROSE, H.C. July 7, 1927. Sent by Messrs. Daehnfeldt & Jensen.

SALMON-ROSE (Daehnfeldt & Jensen), H.C.—2½ feet; flowers 4 inches diameter, pale salmon.

(d) Scarlet.

AWARD.

American Legion, H.C. July 7, 1927. Raised by Messrs. Waller-Franklin Seed Co., Guadalupe, California, U.S.A., and sent by them and Messrs. Barr.

COCHINEAL RED (Dawkins).—2½ feet; flowers 3½ inches diameter, bright scarlet. Salmon and rose rogues.

AMERICAN LEGION (Waller-Franklin, Barr), H.C.—2½ feet; flowers 4 inches diameter, bright scarlet.

(e) Greyish-blue.

CELESTE (Watkins & Simpson).—26 to 28 inches; flowers 3½ inches diameter, dull greyish-blue to dull rosy-lavender. Red and pink rogues.

RAYNES PARK HYBRIDS (Carter).—Like 'Celeste.' White rogues.

(f) Mixed.

AWARDS.

The Shirley Mixed, A.M. July 7, 1927. Raised by the late Rev. W. Wilks and included by the Royal Horticultural Society. The original stock of 'Shirley' strain.

Shirley Selected Strain Mixed, A.M. July 7, 1927. Sent by Messrs. Barr.

The Shirley Mixed, H.C. July 7, 1927. Sent by Messrs. Dobbie and W. H. Simpson.

Shirley Extra Selected, H.C. July 7, 1927. Sent by Messrs. Watkins & Simpson.

SHIRLEY (R.H.S.), A.M.—2½ feet; flowers 4 inches diameter, mainly of white pink, salmon and white edged cerise shades.

SHIRLEY SELECTED STRAIN MIXED (Barr), A.M.—2½ feet; flowers 4 inches diameter, pale pink, rose and rosy-red shades

THE SHIRLEY MIXED (Dobbie), H.C.—2½ feet; flowers 3½ inches diameter, salmon edged white, rose and scarlet shades.

THE SHIRLEY MIXED (W. H. Simpson), H.C.—Flowers 4 inches diameter, rosy-red, pink and pale rose shades.

SHIRLEY EXTRA SELECTED (Watkins & Simpson), H.C.—Flowers 4 inches diameter, mostly rosy-red and pale rose shades.

SHIRLEY SINGLE (Heinemann).—Flowers 4 inches diameter, white edged rose, rosy-red and a few white.

SELECTED SHIRLEY (R. Veitch).—Flowers 4 inches diameter, mostly pale rose with a few pink and rose edged white.

SHIRLEY MIXED (Daehnfeldt & Jensen).—Flowers 4 inches diameter, white, rose and white edged rose.

SHIRLEY MIXED (Heinemann).—3 feet; flowers 3½ inches diameter, pink and rosy-pink shades.

2. FLOWERS SINGLE AND SEMI-DOUBLE.

(a) Flowers mixed.

BUFFHAM'S HYBRIDS (Pennell).—2½ feet; flowers 4 inches diameter, mostly rose, pale pink, white, rose edged white and a few slaty-blue.

DOUBLE MIXED (Heinemann).—2 feet; flowers 3½ to 4 inches diameter, scarlet, rose and white shades.

SHIRLEY IMPROVED MIXED (Carter).—2½ feet; flowers 3½ to 4 inches diameter, white edged deep rose, rosy-red, with a few scarlet.

ELDORADO MIXED (Barr, Waller-Franklin).—2 to 2½ feet; flowers 3½ to 4 inches diameter, white, pale pink, rosy-red, white edged salmon and a few scarlet.

3. FLOWERS SEMI-DOUBLE AND DOUBLE.

(a) Flowers mixed.

AWARDS.

New Double Queen, H.C. July 7, 1927. Raised by Messrs. Yates and sent by Messrs. Barr.

Ryburgh Hybrids, H.C. July 7, 1927. Raised and sent by Messrs. Stark of Ryburgh.

NEW DOUBLE QUEEN (Barr), H.C.—2½ feet; flowers 4 inches diameter, semi-double, white edged pink, pink, rose and scarlet shades.

RYBURGH HYBRIDS (Stark), H.C.—2 feet; flowers 3 to 3½ inches diameter, semi-double, blush to cerise, pink, deep salmon, rose-pink shades. Received as young plants in January 1927, planted out on March 10. Autumn sown.

DOUBLE HYBRIDS (Carter).—2 feet; flowers 3½ inches diameter, semi-double, white, rose-pink, salmon-pink and deep salmon shades.

THE SHIRLEY DOUBLE (W. H. Simpson).—28 inches; flowers 3½ inches, black base diameter, semi-double, white, salmon, pale rose and cerise shades.

DOUBLE MIXED (Daehnfeldt & Jensen).—2½ feet; flowers 3½ inches diameter, semi-double, white, scarlet edged white, pale pink edged white. Scarlet with black base rogues.

RANUNCULUS-FLOWERED (R. Veitch).—2 feet; flowers 3½ inches diameter, semi-double, mostly salmon and deep salmon shades.

FRENCH DWARF (W. H. Simpson).—2½ feet; flowers 3½ inches diameter, semi-double, pink, white, crimson and scarlet shades. Single rogues.

DOUBLE QUEEN (Dobbie).—2½ feet; flowers 3 inches diameter, semi-double, white shaded pink, white edged rose, scarlet. Single and single scarlet, base black rogues.

DOUBLE SALMON (Waller-Franklin).—2 feet; flowers 3½ inches diameter, semi-double, salmon shades; margins wavy. Single pink rogues.

RANUNCULUS SALMON SHADES (Dawkins).—2½ feet; flowers 3 to 3½ inches diameter, semi-double, salmon and salmon-pink shades.

JAPANESE DOUBLE POMPON MIXED (Dawkins).—2½ feet; flowers 2½ inches diameter, double, rose, crimson, a few scarlet shades.

C. *Papaver nudicaule* Group.

(a) *Flowers yellow.*

P. ANOMALUM (Botanic Gardens, München).—1½ feet; flowers 2½ inches diameter, single, rich lemon-yellow.

(b) *Flowers mixed.*

AWARDS.

Sunbeam Improved, A.M. July 7, 1927. Raised by Messrs. Bakers and sent by Messrs. Stark.

Coonara Pink, H.C. July 7, 1927. Sent by Messrs. Stark.

COONARA PINK (Stark), H.C.—20 to 24 inches; flowers 3 to 3½ inches diameter, single, orange-pink, salmon-pink, orange-carmine and creamy-pink shades.

SUNBEAM IMPROVED (Stark), A.M.—24 inches; flowers 3 to 3½ inches diameter, single, white, yellow and orange shades.

D. *Species.*

(a) *Blush spotted purplish-maroon.*

AWARD.

Papaver setigerum, H.C. July 7, 1927. Sent by the Botanic Gardens, Stockholm, and the Harvard University, U.S.A.

P. SETIGERUM (Botanic Gardens, Stockholm, Harvard University), H.C.—22 inches; flowers blush with a purplish-maroon cross at the base.

(b) *Scarlet.*

AWARDS.

P. apulum, A.M. July 7, 1927. Sent by the Chelsea Physic Gardens and the Royal Botanic Gardens, Kew.

P. pavoninum, H.C. July 7, 1927. Sent by the Botanic Gardens of Harvard University and Kew. Also by Messrs. Barr as 'Peacock,' this shares the award.

P. umbrosum, H.C. July 7, 1927. Sent by the Botanic Gardens, Glasnevin, and Messrs. Daehnfeldt & Jensen.

P. glaucum, H.C. July 7, 1927. Sent by the Royal Botanic Gardens, Kew, and Messrs. Daehnfeldt & Jensen. Also as the 'Tulip Poppy' by Messrs. Barr, and this shares the award.

P. PAVONINUM (Botanic Gardens, Harvard University, Kew), **H.C.**—22 to 24 inches; flowers 2½ inches diameter, scarlet, largely zoned blackish at base. Flowering from May 28.

PEACOCK (Barr), **H.C.**—Like '*P. pavoninum*.'

P. APULUM (Chelsea Physic Gardens, Kew), **A.M.**—18 inches; flowers 2½ inches diameter, scarlet, base with large regular blackish zone; foliage somewhat hairy. Flowering from May 26.

P. UMBROSUM (Botanic Gardens, Glasnevin, Daehnfeldt & Jensen), **H.C.**—18 to 20 inches; foliage hairy; flowers 3 inches diameter, bright deep scarlet with large pear-shaped black blotches. Flowering from June 30.

P. COMMUTATUM (Royal Botanic Gardens, Kew, Botanic Gardens, Cambridge).—2½ feet; foliage hairy; flowers 3½ to 4 inches diameter, scarlet to crimson-scarlet, base with a black-edged white cross. Flowering from July 1.

P. GLAUCUM (Royal Botanic Gardens, Kew, Daehnfeldt & Jensen), **H.C.**—20 inches; foliage grey-green; flowers 3½ inches diameter, scarlet base with a black cross. Flowering from June 23.

TULIP POPPY (Barr), **H.C.**—Like '*P. glaucum*.'

P. ACULEATUM (Botanic Gardens, Cambridge).—2½ feet; flowers 2 inches diameter, scarlet. Flowering from July 5.

(c) *Ruby*.

P. ARENARIUM (Royal Botanic Gardens, Kew).—15 inches; foliage somewhat hairy; flowers 1½ inches diameter, ruby, base with small black blotches; seed pods with stiff yellowish curved bristles. Flowering from July 5.

FREESIAS AT WISLEY, 1927.

SEVENTY-FIVE varieties of Freesias were represented in the trial commenced in 1926 and to be continued in the future. In several instances a variety was grown from more than one source, so that 110 stocks were included. The corms were planted in 5-inch pots, five corms to a pot, on August 23, 1926. They were grown as cool as possible through the season, and judged when in flower in March and April 1927. A few varieties suffered from a curious foliage disease, the cause of which is at present unknown, and the varieties 'Golden Wonder' and 'Mignonne' from Messrs. VAN TUBERGEN, and 'Heliotrope Queen' and 'Russet' from Messrs. CHAPMAN did not start into growth and are not further mentioned.

AWARDS, DESCRIPTIONS, AND NOTES.

1. *Flowers white.*

AWARD.

Giant White, A.M. April 8, 1927. Raised by Messrs. Fletcher and sent by Mr. F. H. Chapman of Rye, Sussex.

GIANT WHITE (Chapman), A.M.—16 to 18 inches; 6 or 7 flowers to the spike, 3 to 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, pure white, orange at base of throat; sweetly scented. Flowering from March 28.

POLAR BEAR (Dalrymple).—12 to 15 inches; 4 to 6 flowers to the spike, 3 out at a time; flowers $1\frac{1}{2}$ inch diameter, white, reverse tinged dull mauve. Flowering from March 23.

WHITE PEARL (van de Weyer).—18 to 20 inches; 3 to 5 flowers to the spike, 3 out at a time; flowers $1\frac{1}{2}$ inch diameter, white, reverse very faintly tinged mauve. Flowering from April 14.

PEACE (Dalrymple).—14 to 15 inches; 6 to 8 flowers to the spike, 3 out at a time; flowers $1\frac{1}{2}$ inch diameter, white, reverse flushed mauve. Flowering from March 31.

JOLLITY (Chapman).—16 to 18 inches; 5 or 6 flowers to the spike, 3 out at a time; flowers 1 inch diameter, white faintly tinged pale mauve, throat blotched orange lined dull mauve. Flowering from March 24.

2. *Flowers cream.*

AWARD.

Orange Tip, A.M. April 8, 1927. Raised and sent by Mr. G. H. Dalrymple of Bartley, Southampton.

PRIMROSE DAY (Mauger, Dalrymple).—18 or 20 inches; 3 to 5 flowers to the spike, 3 or 4 out at a time; flowers $1\frac{1}{2}$ to $1\frac{1}{4}$ inch diameter, creamy-white, throat shaded lemon. Flowering from March 29.

YELLOW QUEEN (Dalrymple).—15 to 16 inches; 5 or 6 flowers to the spike, 3 or 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, pale cream, throat and lower petals rich orange. Flowering from March 21. Somewhat diseased.

CREAM CHEESE (Dalrymple).—18 inches; 5 to 8 flowers to the spike, 4 out at a time; flowers $1\frac{1}{2}$ to $1\frac{1}{4}$ inch diameter, cream, margins shaded creamy-yellow. Flowering from April 8.

PIPES OF PAN (Dalrymple).—18 to 20 inches; 4 to 6 flowers to the spike, 3 or 4 out at a time; flowers $1\frac{1}{2}$ to $1\frac{1}{4}$ inch diameter, cream, reverse faintly tinged pale mauve. Flowering from March 31.

ORANGE TIP (Dalrymple), A.M.—18 inches; 4 to 8 flowers to the spike, 3 or 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, creamy-sulphur, lower petals rich orange. Flowering from March 29.

3. *Flowers creamy-yellow.*

AWARDS.

Yellow Hammer, A.M. March 25, 1927. Raised and sent by Mr. Dalrymple.
Treasure, A.M. April 8, 1927. Raised by Messrs. van Tubergen and sent by them and Messrs. van Waveren of Holland, Dalrymple, Carter of Raynes Park, S.W. [A.M. 1921 (van Tubergen)].

Golden Eagle, A.M. March 25, 1927. Raised and sent by Mr. Dalrymple.

Apogee, H.C. April 8, 1927. Raised by Messrs. van Tubergen and sent by them and Mr. Dalrymple [A.M. 1920 (van Tubergen)].

Buttercup, H.C. April 8, 1927. Raised by Messrs. van Tubergen and sent by Messrs. van Tubergen, Haarlem, Holland, Carter, Dalrymple, Mauger, Guernsey, C.I.

APOGEE (van Tubergen, Dalrymple), H.C.—Dwarf habit, 12 to 14 inches; 5 to 8 flowers to the spike, 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, clear creamy-primrose, throat shaded orange, scented. Flowering from March 19.

YELLOW HAMMER (Dalrymple), A.M.—20 inches; 4 to 8 flowers to the spike, 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, pale creamy-yellow, throat shaded orange. Flowering from March 17. An improved 'Buttercup.'

BUTTERCUP (van Tubergen, Carter, Dalrymple, Mauger), H.C.—Very much like 'Yellow Hammer,' except that the flowers are smaller. Flowering from March 9. Also sent by Messrs. van Tubergen as 'Albatre' in error.

DAFFODIL (van Tubergen, van Waveren, Carter)—Very much like 'Buttercup,' but with smaller flowers, the reverse tinged greenish.

TREASURE (van Tubergen, van Waveren, Dalrymple, Carter), A.M.—18 inches; 4 to 7 flowers to the spike, 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, pale creamy-yellow, throat rich orange, reverse shaded bluish-mauve. Flowering from March 19.

GOLDEN EAGLE (Dalrymple), A.M.—16 to 17 inches; 4 to 6 flowers to the spike, 3 or 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, bright clear lemon-yellow, throat shaded orange; a brighter and darker yellow than 'Treasure.' Flowering from March 21.

SUCCESS (Carter).—15 to 16 inches; 4 to 6 flowers to the spike, 3 out at a time; flowers $1\frac{1}{2}$ inch diameter, bright creamy-yellow, reverse tinged mauve, throat pale orange. Flowering from March 28.

JAUNE D'ŒUF (van Tubergen).—16 inches; 5 to 7 flowers to the spike, 3 or 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, bright creamy-yellow, throat rich orange. Flowering from March 19.

4. *Flowers yellow.*

AWARD.

Golden Oriole, H.C. April 8, 1927. Raised and sent by Mr. Dalrymple.

GOLDEN KING (Dalrymple).—16 inches; 5 to 8 flowers to the spike, 3 or 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, rich sulphur-yellow, throat shaded orange. Flowering from April 10.

MINE D'OR (Carter).—15 inches; 5 to 7 flowers to the spike, 3 out at a time; flowers 1 inch diameter, bright yellow, throat shaded orange-yellow. Flowering from March 28.

CHINA (Dalrymple).—17 to 18 inches, 5 or 6 flowers to the spike, 4 out at a time; flowers 1 inch diameter, bright rich yellow, reverse tinged dull mauve, throat shaded orange, lined brown. Flowering from March 10.

CHAPMANNI (Carter).—15 inches, 4 to 6 flowers to the spike, 3 out at a time; flowers 1 inch, rich yellow, throat shaded orange-yellow. Flowering from March 24.

GOLDEN ORIOLE (Dalrymple), H.C.—17 inches; 4 to 8 flowers to the spike, 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, sulphur-yellow, throat rich orange-yellow. Flowering from March 31.

GOLDCOIN (van Tubergen).—14 inches; 4 to 6 flowers to the spike, 3 out at a time; flowers $\frac{3}{4}$ inch diameter, rich orange-yellow, throat rich orange. Flowering from March 28.

GOLDEN QUEEN (Carter).—15 to 16 inches; 4 to 6 flowers to the spike, 3 out at a time; flowers 1 inch diameter, rich orange-yellow. Flowering from March 29.

GOLDMINE (Dalrymple).—12 to 14 inches; 5 to 7 flowers to the spike, 3 out at a time; flowers $1\frac{1}{2}$ inch diameter, rich orange-yellow. Flowering from March 21. Badly diseased.

FLAME (Dalrymple, Mauger).—16 to 17 inches; 6 to 7 flowers to the spike, 3 or 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, rich orange, throat lined brown. Mr. Dalrymple's stock was badly diseased.

STOWE (Dalrymple).—16 inches; 5 to 7 flowers to the spike, 3 or 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, rich deep orange, reverse shaded terra-cotta, throat lined brown, margins and centre darker. Flowering from March 23.

5. *Flowers rosy-carmine.*

AWARD.

APOTHÉOSIS, A.M. March 25, 1927. Raised and sent by Messrs. van Tubergen A.M. 1920 (van Tubergen)].

DAINTY (Carter, van Tubergen).—22 to 24 inches; 5 or 8 flowers to the spike, 3 to 5 out at a time; flowers $1\frac{1}{2}$ inch diameter, pale rosy carmine, lower petal tinged orange, flowers darken with age, petals reflexed. Flowering from April 8.

TUBERGENI (Carter).—15 inches; 5 to 8 flowers to the spike, 4 out at a time; flowers $\frac{7}{8}$ inch diameter, rosy-carmine; base of throat orange. Flowering from April 4.

GENERAL PERSHING (van Waveren, Carter).—16 inches; 5 to 7 flowers to the spike, 3 out at a time; flowers $1\frac{1}{8}$ inch diameter, rosy-carmine, lower petal pale cream, flowers darken with age. Flowering from April 19.

LE PHARE (Carter, van Waveren).—12 inches; 4 to 7 flowers to the spike, 3 out at a time; flowers 1 inch diameter, rosy-carmine, throat white lined carmine, base orange. Flowering from March 24.

ROSE PRINCE (Dalrymple).—16 to 17 inches; 4 to 7 flowers to the spike, 3 or 4 out at a time; flowers $1\frac{1}{8}$ inch diameter, rich rosy-carmine, centre of lower petals tinged orange. Flowering from March 15.

APOTHÉOSIS (van Tubergen), A.M.—18 to 19 inches, 5 to 7 flowers to the spike, 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, rich rosy-carmine, darkens with age, centre of lower petal tinged lemon. Flowering from March 19. Also sent by Messrs. Mauger, whose stock failed to grow.

6. *Flowers pinkish-mauve.*

AWARD.

Twilight, H.C. March 25, 1927. Raised and sent by Mr. Dalrymple.

OPAL (van Tubergen).—18 inches; 5 to 7 flowers to the spike, 3 or 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, pale pinkish-mauve on pale cream, orange at base of throat. Flowering from March 19. Also sent as 'Apogee' by Messrs. Carter in error.

TWILIGHT (Dalrymple), H.C.—16 inches; 5 to 7 flowers to the spike, 3 or 4 out at a time; flowers $1\frac{1}{8}$ inch diameter, dull pinkish-mauve, lower petal lined orange, throat lined mauve. Flowering from March 19.

BARTLEY ROSE (Dalrymple).—18 to 20 inches; 5 to 7 flowers to the spike, 3 or 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, bright rosy-mauve, throat white, lined rosy-mauve. Flowering from March 19.

7. *Flowers rose.*

AWARDS.

Jubilee, A.M. March 25, 1927. Raised by Messrs. van Tubergen and sent by Messrs. Dalrymple, van Waveren, Carter, and van Tubergen.

Rosebud, H.C. April 8, 1927. Raised by the late Rev. J. Jacob and sent by Mr. Dalrymple [A.M. 1920 (Jacob)].

Mouette, H.C. April 8, 1927. Raised by Messrs. van Tubergen and sent by Messrs. Dalrymple and Carter.

Youth, H.C. April 8, 1927. Raised and sent by Mr. Dalrymple.

Conquest, H.C. April 8, 1927. Raised by Messrs. van Tubergen and sent by Messrs. Carter, Dalrymple, van Waveren, and van Tubergen.

Old Rose, H.C. April 8, 1927. Raised and sent by Mr. Dalrymple.

ROSEBUD (Dalrymple), H.C.—18 to 19 inches; 4 to 7 flowers to the spike, 3 or 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, white, margins flushed bright rose, base of throat orange, petals reflexed. Flowering from March 23.

MOUETTE (Dalrymple, Carter), H.C.—16 to 18 inches; 5 to 8 flowers to the spike, 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, very pale rose, throat orange lined rosy-carmine. Flowering from March 24.

JUBILEE (Dalrymple, van Waveren, Carter, van Tubergen), A.M.—Habit compact; 12 to 14 inches; 5 to 7 flowers to the spike, 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, very pale rose, throat white flushed orange, lined deep rosy-carmine. Flowering from March 21.

ROSA BONHEUR (van Waveren, Carter).—18 inches; 3 to 5 flowers to the spike, 3 out at a time; flowers 1 inch diameter, pale rose; lower petal cream blotched yellow. Flowering from March 23.

YOUTH (Dalrymple), H.C.—16 inches; 4 or 5 flowers to the spike, 3 out at a time; flowers $1\frac{1}{2}$ inch diameter, rich rose, throat white lined rose; petals reflexed. Flowering from March 26.

APPLE BLOSSOM (van Waveren, Carter).—18 inches; 4 to 8 flowers to the spike, 4 out at a time; flowers $\frac{11}{16}$ inch diameter, bright rose, throat white lined rose. Flowering from March 22.

CONQUEST (Carter, Dalrymple, van Waveren, van Tubergen), H.C.—18 to 20 inches; 5 to 8 flowers to the spike, 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, bright rose, darkens with age, throat white lined rose. Flowering from March 28.

AMABILIS (van Tubergen).—15 inches; 4 to 6 flowers to the spike, 4 out at a time; flowers 1 to $1\frac{1}{2}$ inch diameter, rich bright rose, darkens with age. Flowering from March 29.

OLD ROSE (Dalrymple), H.C.—20 to 22 inches; 5 to 8 flowers to the spike, 4 out at a time; flowers 1 inch diameter, rich old rose, throat pale cream, lower petals blotched orange. Flowering from March 19.

8. *Flowers Bronzy-mauve.*

CARMENCITA (van Waveren, Carter).—15 to 16 inches; 4 or 5 flowers to the spike, 3 out at a time; flowers $1\frac{1}{16}$ inch diameter, amaranth-pink shaded bronze, lower petals shaded orange. Flowering from April 21.

LA CHARMANTE (Dalrymple, van Tubergen, Mauger).—18 inches, 5 or 6 flowers to the spike, 3 or 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, amaranth-pink shaded bronze, throat cream lined terra-cotta. Flowering from March 28.

INSULINDE (van Tubergen).—18 inches; 4 or 5 flowers to the spike, 2 or 3 out at a time; flowers $1\frac{1}{2}$ inch diameter, pinkish-terra-cotta shaded bronze, throat creamy-white lined terra-cotta. Flowering from March 28.

AUREOLE (Chapman).—16 inches; 4 to 6 flowers to the spike, 3 out at a time; flowers 1 inch diameter, dull brownish-mauve on yellow, throat cream shaded orange. Flowering from March 28.

9. *Flowers red.*

AWARDS.

Red Indian, H.C. April 8, 1927. Raised by the late Rev. J. Jacob and sent by Mr. Dalrymple.

ROBINETTA, C. March 25, 1927. Raised by Messrs. van Tubergen and sent by them and Messrs. Dalrymple, van Waveren.

GLOWING EMBERS (Dalrymple).—20 inches; 5 or 6 flowers to the spike, 3 out at a time; flowers $1\frac{1}{2}$ inch diameter, dull pale terra-cotta, throat tinged orange. Flowering from March 21. Somewhat diseased.

ROBINETTA (Dalrymple, van Waveren, van Tubergen), C.—16 to 18 inches; 3 to 6 flowers to the spike; 3 or 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, dull rosy-red, throat white, centre of lower petals yellow. Flowering from March 19. Also sent by Messrs. Carter, whose stock was mixed.

RED INDIAN (Dalrymple), H.C.—18 inches; 5 to 7 flowers to the spike, 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, rich bright garnet-red, throat shaded pale cream. Flowering from April 4.

10. *Flowers pale lavender on cream.*

AWARDS.

Orchidea, A.M. April 8, 1927. Raised and sent by Messrs. van Tubergen.

Cœur d'Or, H.C. April 8, 1927. Raised and sent by Messrs. van Tubergen.

CŒUR D'OR (van Tubergen), H.C.—18 to 20 inches, 6 to 8 flowers to the spike, 4 out at a time; flowers $1\frac{1}{2}$ to $1\frac{3}{4}$ inch diameter, deep cream, margins shaded pale mauve, throat cream shaded orange. Flowering from March 24.

ORCHIDEA (van Tubergen), A.M.—20 to 22 inches; 6 to 8 flowers to the spike, 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, pale lavender, base shaded deep cream, throat rich orange. Flowering from March 24.

11. *Flowers lavender.*

AWARDS.

Grey Dawn, A.M. March 25, 1927. Raised and sent by Mr. Dalrymple.

Fairy, A.M. April 8, 1927. Raised and sent by Messrs. van Tubergen.

Blue Beard, H.C. April 8, 1927. Raised by Messrs. van Tubergen and sent by Mr. Dalrymple.

MERRY WIDOW (Carter).—16 inches; 4 to 5 flowers to the spike, 3 out at a time; flowers $1\frac{1}{2}$ inch diameter, white flaked pale bluish-lavender, lower petal white blotched pale orange. Flowering from April 2.

GREY DAWN (Dalrymple), A.M.—22 to 24 inches; 5 to 8 flowers to the spike, 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, greyish-lavender, throat white. Flowering from March 19.

MOONLIGHT (Chapman).—18 inches; 4 to 5 flowers to the spike, 3 out at a time; flowers 1 to $1\frac{1}{2}$ inch diameter, pale lavender. Flowering from March 29. Somewhat diseased.

FAIRY (van Tubergen), A.M.—20 inches; 4 to 7 flowers to the spike, 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, pale lavender, lower petal white, blotched orange. Flowering from March 24.

FORETASTE (Chapman).—18 inches; 6 to 9 flowers to the spike, 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, pale lavender, lower petal white, centre pale orange. Flowering from March 9.

LA FRAPPANTE (Carter, Dalrymple).—18 to 20 inches; 3 to 6 flowers to the spike, 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, lavender, throat white. Flowering from March 28.

BLUE BEARD (Dalrymple), H.C.—Compact habit, 15 inches; 4 to 6 flowers to the spike, 3 to 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, lavender-blue, lower petal lavender-blue shaded bronze. Flowering from March 29.

GIANT (Carter, van Waveren).—18 inches; 5 to 8 flowers to the spike, 3 or 4 out at a time; flowers 1 inch diameter, pale blue lavender-mauve, lower petal white blotched bronzy-orange. Flowering from March 28.

12. *Flowers lavender-mauve.*

AWARD.

Wistaria, A.M. March 25, 1927. Raised by Mr. Dalrymple and sent by Messrs. Dobbie [A.M. 1922 (Dalrymple)].

EARLY BIRD (Dalrymple).—12 inches; 2 or 3 flowers to the spike, 3 out at a time; flowers $1\frac{1}{2}$ inches diameter, very pale lavender-mauve, centre of lower petal tinged pale orange; petals expanded. Flowering from March 20. Diseased.

MAUVE IDEAL (Mauger).—12 to 14 inches; 5 to 8 flowers to the spike, 4 out at a time; flowers $1\frac{1}{2}$ inches diameter, light lavender mauve, throat white. Flowering from March 18. Diseased.

SWEET LAVENDER (Carter).—16 inches; 4 to 6 flowers to the spike, 3 or 4 out at a time; flowers $\frac{3}{4}$ to $\frac{7}{8}$ inch diameter, mauve, base of throat orange. Flowering from March 25.

AMETHYST (Carter, van Waveren).—16 to 18 inches; 5 to 7 flowers to the spike, 3 or 4 out at a time; flowers $\frac{3}{4}$ to $\frac{7}{8}$ inch diameter, mauve, throat shaded orange. Flowering from March 24.

PRECIOSA (Carter).—14 to 15 inches; 4 to 6 flowers to the spike, 3 or 4 out at a time; flowers $\frac{3}{4}$ to 1 inch diameter, mauve, throat white, base orange. Flowering from April 2.

WEDGWOOD (Dalrymple).—17 inches; 3 to 5 flowers to the spike, 4 out at a time; flowers $1\frac{1}{2}$ inch diameter, bluish-mauve, throat white. Flowering from March 21.

WISTARIA (Dobbie), A.M.—16 to 17 inches; 5 or 6 flowers to the spike, 4 out at a time; flowers $1\frac{1}{2}$ to $1\frac{3}{4}$ inch diameter, light lavender-violet, centre of lower petal faintly tinged cream; very susceptible to colour breaking. Flowering from March 19.

GLADIOLI AT WISLEY, 1926-7.

A NOTE on the extent of the *Gladiolus* trial in 1926 was given on p. 98 of our JOURNAL, vol. 52, and in 1927 the number of stocks grown was increased by further acquisitions to 630, representing 443 varieties.

The objects in view in making the trial were not only the selection of the best varieties now available, but also the better classification of those varieties. The classification finally arrived at was into three main classes, viz. :

CLASS 1. *Primulinus* types represented by 147 varieties.

CLASS 2. *Primulinus grandiflorus* types represented by 81 varieties.

CLASS 3. Large flowered types represented by 215 varieties.

All the varieties grown were planted between April 25 and April 30, 1927, on an even piece of ground, and most made good growth, but one or other of the diseases to which *Gladioli* are liable attacked a good many plants and, as in so many gardens, interfered somewhat with the development of their flowers, in some instances preventing flowering altogether.

Both in the classification and in the judging the Floral Committee had the assistance of representatives of the *Gladiolus* Society, and this joint Committee examined the trials on several occasions in 1927, the Floral Committee acting alone in 1926.

The recommendations made are set out in the notes which follow, where the varieties are grouped under their dominant colour in each of the three classes. The height and general characteristics, as well as time of flowering, are shown. It must be remembered that there will be from season to season a certain amount of variation in height and in the actual date of flowering, though the comparative stature and season of flowering will remain the same.

Of the varieties planted, for one reason or another, the following failed to flower; viz.,

'Apple Blossom' (Bath); 'Betty Linden' (Bilby); 'Cicely' (Churcher); 'Conqueror' (Grullemans); 'Dignity' (Dobbie); 'Globe' (C. A. van Zanten); 'Golden Swallow' (Churcher); 'Guy Mannering' (Dobbie); 'Ivanhoe' (Bilby); 'Jean Tenney' (Bilby); 'Lovely' (Dobbie); 'Mauve' (C. A. van Zanten); 'Nankeen' (Frins); 'Orange Glory' (Grullemans, Hewitt); 'Palestine' (Kelway); 'Paraival' (Bath); 'Proserpine' (C. A. van Zanten); 'Ruffled Gem' (Bath, Dobbie); 'Sunset' (Kelway); 'Sulphur King' (Grullemans); 'Te Whiti' (Bilby); 'Wairangi' (Bilby);

and they are not further referred to.

In the following notes: **A.M.** = Award of Merit. **H.C.** = Highly Commended. **C.** = Commended.

The letter within brackets following the award indicates the purpose for which the plant seems best fitted, viz. :

(g) = for garden decoration. (c) = for cutting. (e) = for show.

AWARDS, DESCRIPTIONS, AND NOTES.

CLASS I.—*Primulinus* Types.*Flowers white.*

AWARDS.

L'Innocence, H.C. (g.) August 12, 1926. Raised by Messrs. Krelage and sent by Messrs. van Tubergen of Haarlem, Holland, Netherlands Gladiolus Society, Messrs. Dobbie of Edinburgh, and Mr. Morris of Birmingham (1927).

White Lady, H.C. (g.) August 12, 1926. Raised and sent by Messrs. Nieuwenhuis of Lisse, Holland.

L'INNOCENCE (van Tubergen, Netherlands Gladiolus Society, Dobbie, Morris), H.C.—3½ feet, with 12 flowers; flowers 2½ inches diameter, hooded, creamy-white. Flowering from August 2.

ALBERTINA (Netherlands Gladiolus Society).—Too much like 'L'Innocence'; throat of a whiter shade.

WHITE LADY (Nieuwenhuis), H.C.—3½ to 4 feet, with 11 to 13 flowers; flowers 3 inches diameter, hooded, creamy-white, somewhat clearer white than in 'L'Innocence.' Flowering from July 24.

WHITE BUTTERFLY (Kunderd).—4 to 4½ feet, with 14 or 15 closely set flowers; flowers 3½ inches diameter, hooded, white, with a faint carmine flush, margins wavy. Flowering from July 20. Raised by sender.

Flowers yellow.

AWARDS.

Souvenir, A.M. (g.) August 12, 1926. Raised by Mr. Jonkheer and sent by Messrs. R. Veitch of Exeter, Barr of King Street, Covent Garden, W.C., Dobbie, van Tubergen, Webb of Stourbridge, Dawkins of King's Road, Chelsea, Bath of Wisbech, Morris. [A.M. 1921 (Velthuys).]

Coquette, H.C. (g.) August 12, 1926. Raised by Messrs. Krelage and sent by Messrs. van Tubergen.

Phyllis Kelway, H.C. (g.) August 12, 1926. Raised and sent by Messrs. Kelway, Langport, Somerset. [A.M. 1916 (Kelway)].

Sedan, H.C. (g.) August 5, 1927. Raised by Messrs. Kunderd and sent by Messrs. Bath of Wisbech.

Marjoletti, H.C. (g.) August 12, 1927. Raised and sent by Messrs. Grullemans of Lisse, Holland.

Yolande, H.C. (g., c.) August 12, 1927. Raised and sent by Mr. A. J. Bliss of Morwelham, Tavistock.

CITRONELLA (Netherlands Gladiolus Society, van Tubergen, Morris, Dobbie, C. A. van Zanten).—3½ feet, branched, with 10 to 12 flowers; flowers closely set, 3½ inches diameter, hooded, creamy-primrose. Flowering from July 26.

ANITA (Bath).—4 feet, with 16 flowers; flowers 2½ inches diameter, hooded, creamy-primrose, tinged pink when old. Flowering from July 26.

GHOST (Kelway).—4 feet, unbranched, with 13 flowers; flowers widely set, 2½ inches diameter, hooded, pale primrose, streaked pale red on reverse. Flowering from July 20.

GOLD ELSE (Dawkins, C. A. van Zanten).—3½ feet, with 12 flowers; flowers closely set, 2½ inches diameter, pale primrose, lower petals of a darker shade. Flowering from July 26. Distinct from the variety sent under this name by Messrs. Bath (p. 347).

ALASKA (Netherlands Gladiolus Society).—3½ feet, branched, with 8 or 9 flowers; flowers 2½ inches diameter, hooded, pale primrose, lower petals darker. Flowering from August 2.

CANOPUS (Bath).—4 feet, branched, with 14 flowers; flowers closely set, 3½ inches diameter, hooded, creamy-primrose, fades and tinges pink when old. Flowering from July 26.

SEDAN (Bath), H.C.—3½ feet, branched, with 13 or 14 flowers; flowers closely set, 3½ inches diameter, upper petal horizontal, lower petal cream with central broad dull carmine stripes, margins wavy. Flowering from July 26.

COQUETTE (van Tubergen), H.C.—3½ feet, branched, with 11 flowers; flowers closely set, 2½ inches diameter, hooded, dull creamy-yellow, centre of lower petals striped and suffused crimson. Flowering from July 26.

BUTTERCUP (R. Veitch).—3½ feet, branched, with 12 or 13 flowers closely set, 4 out at a time; flowers 2½ inches diameter, hooded, rich creamy-yellow. Flowering from July 28.

PHYLLIS KELWAY (Kelway), H.C.—4½ to 5 feet, branched, with 14 to 16 flowers, 4 out at a time; flowers closely set, 3½ inches diameter, upper petals horizontal, rich creamy-yellow, margins somewhat wavy. Flowering from July 30.

L'OR D'AUSTRALIE (Grullemans).—4 to 4½ feet, branched, with 12 or 13 flowers, 4 out at a time; flowers closely set, 2½ inches diameter; very hooded, rich creamy-yellow. Flowering from July 26.

YELLOW QUEEN (R. Veitch).—3 to 3½ feet, branched, with 12 flowers, 3 out at a time; flowers closely set, 2½ inches diameter, sulphur, tinged pink as flower ages, hooded. Flowering from July 28.

MARJOLETTI (Grullemans), H.C.—3½ feet, unbranched, with 12 to 14 closely set flowers, 3 out at a time; flowers 3 inches diameter, pale lemon-yellow, upper petal horizontal. Flowering from July 22.

MARTINET (Bath).—4 feet, branched, with 10 to 12 closely set flowers, 2 or 3 out at a time; flowers 3½ inches diameter, bright lemon-yellow, upper petal horizontal. Flowering from July 24.

MRS. GRULLEMANS (Barr).—3½ feet, unbranched, with 9 or 10 closely set tubular flowers, 2 or 3 out at a time; flowers 2½ inches diameter, lemon-yellow, hooded. Flowering from August 12.

PRIMULINUS TYPE (van Tubergen, Barr).—3 feet, unbranched, with 8 widely set tubular flowers; flowers 1½ inches diameter, bright lemon-yellow, hooded. Flowering from July 8. Found growing close to the Victoria Falls on the Zambesi River.

SOUVENIR (R. Veitch, Barr, Dobbie, van Tubergen, Webb, Dawkins, Bath, Morris), A.M.—4½ feet, branched, with 10 to 12 closely set flowers; flowers 3 inches diameter, rich lemon-yellow, hooded. Flowering from July 26.

YOLANDE (Bliss), H.C.—4½ to 5 feet, branched, with 18 medium set flowers; flowers 2½ inches diameter, buttercup-yellow; upper petal horizontal. Flowering from August 6.

Flowers yellow shaded pink.

AWARDS.

Xantha, A.M. (g., c., e.) August 5, 1927. Raised by Messrs. Krelage and sent by Messrs. Amos of Bergholt Road, Colchester, van Tubergen, Bath, and C. A. van Zanten of Heemskerk, Holland.

Orange Queen, A.M. (g.) August 5, 1927. Raised by Messrs. Pfitzer and sent by Messrs. Netherlands Gladiolus Society, Webb, van Tubergen, Konyonenburg & Mark of Noordwyk, Holland, Dobbie, Barr, Bath, C. A. van Zanten. Also sent by Messrs. Pfitzer of Stuttgart, Germany, under the name 'Orange Königin'; this shares the award.

Elberton, H.C. (g.) July 30, 1926. Raised by Messrs. Kunderd and sent by Messrs. Bath, Amos, and Lowe & Gibson of Crawley Down, Sussex.

Mrs. Swainson, H.C. (g.) August 12, 1926. Raised and sent by Messrs. Kelway. [A.M. 1919 (Kelway).]

Sunrise, H.C. (g.) August 12, 1926. Raised and sent by Messrs. Grullemans of Lisse, Holland.

Gold Else, H.C. (g., c.) August 5, 1927. Sent by Messrs. Bath.

ELBERTON (Bath, Amos, Lowe & Gibson), H.C.—4 to 4½ feet, branched, with 12 to 14 closely set flowers; flowers 2½ inches diameter, cream, tipped faint carmine, hooded, margins somewhat wavy. Flowering from July 27.

CANDLE LIGHT (Kunderd).—4½ feet, branched, with 12 closely set flowers; flowers 3½ inches diameter, pale cream, tips flaked carmine, lower petals cream, upper petal horizontal, margins wavy. Flowering from July 28.

SULPHERINO (Prins).—24 to 28 inches, branched, with 8 to 10 flowers widely set, 2 or 3 out at a time; flowers 2½ inches diameter, cream occasionally streaked carmine, centre of lower petal streaked carmine. Flowering from August 2.

MRS. SWAINSON (Kelway), H.C.—3½ feet, somewhat branched, with 12 or 13 closely set flowers; flowers 3½ inches diameter, cream, tips suffused carmine, upper petal horizontal. Flowering from July 27.

RAMONA (Kunderd).—3½ feet, branched, with 12 very closely set flowers; flowers 3½ inches diameter, cream flushed pale salmon-pink, lower petals cream, upper petals horizontal, margins somewhat wavy. Flowering from July 30.

SUNRISE (Grullemans), H.C.—4½ feet, branched, with 14 to 16 closely set flowers; flowers 3 inches diameter, creamy-yellow faintly flushed pink, lower petals sulphur, hooded, margins somewhat wavy. Flowering from July 30. Also sent under this name by Messrs. Bath, orange suffused salmon; Messrs. Barr, R. Veitch, cherry-red, lower petals creamy-yellow.

GOLD ELSE (Bath), H.C.—4 feet, branched, with 11 or 12 closely set flowers; flowers 3 inches diameter, hooded, pale creamy-buff, reverse shaded red. Flowering from July 24. Distinct from the variety sent under this name by Messrs. Dawkins and van Zanten.

OZONE (Kunderd).—4 to 4½ feet, branched, with 14 or 15 medium-spaced flowers; flowers 2½ inches diameter, hooded, creamy-buff faintly flushed carmine, lower petals primrose. Flowering from July 26.

GOLDEN GIRL (Kelway).—3 feet, unbranched, with 7 to 10 closely set flowers; flowers 3 inches diameter, creamy-primrose faintly flushed carmine, upper petal horizontal. Flowering from July 24.

KING OF THE YELLOWS (Bath).—4 feet, unbranched, with 12 closely set flowers; flowers hooded, 3 inches diameter, yellowish-buff, tips suffused carmine. Flowering from July 25.

THECLA (Bath, van Tubergen).—4 feet, branched, with 12 closely set flowers; flowers hooded, 2½ inches diameter, pale primrose flushed pale carmine-pink. Flowering from July 29.

GOLDEN DROP (Grullemans, Barr).—3½ to 3¾ feet, branched, with 12 or 13 closely set flowers, 3 or 4 out at a time; flowers hooded, 2½ inches diameter, dull lemon-yellow faintly flushed carmine. Flowering from July 28.

BOBOLINK (Bath).—3½ feet, branched, with 11 or 12 closely set flowers, 3 out at a time; flowers hooded, orange-buff shaded carmine, lower petals pale yellow. Flowering from July 15. Contained salmon rogue.

BUTTERFLY (Grullemans).—4 to 4½ feet, branched, with 14 or 15 medium-spaced flowers, 3 out at a time; flowers 2½ inches diameter, hooded, chrome-yellow suffused carmine. Flowering from July 25.

WILHELMENA REGINA (Netherlands Gladiolus Society).—3 feet, branched, with 10 to 12 closely set flowers, 2 or 3 out at a time; flowers 3 inches diameter, hooded, bright orange faintly shaded carmine. Flowering from July 25. Compact habit.

XANTHIA (Amos, van Tubergen, Bath, C. A. van Zanten), A.M.—4 feet, branched, with 14 to 16 closely set flowers, 3 or 4 out at a time; flowers hooded, 2½ inches diameter, bright rich orange, lined carmine on lower petals. Flowering from July 27.

ORANGE GLOBE (Netherlands Gladiolus Society).—4 feet, branched, with 14 closely set flowers, 3 or 4 out at a time; flowers hooded, 3½ inches diameter, rich orange, reverse suffused carmine, centre of lower petals lined crimson. Flowering from July 30.

ORANGE QUEEN (Netherlands Gladiolus Society, Webb, van Tubergen, Konynenburg & Mark, Dobbie, Barr, Bath, C. A. van Zanten), A.M.—4 to 4½ feet, branched, with 16 very closely arranged flowers, 4 out at a time; flowers 3½ inches diameter, yellowish-buff, reverse faintly tinged carmine, upper petal horizontal. Flowering from August 8.

ORANGE KÖNIGIN (Pfitzer), A.M.—The original name of 'Orange Queen.'

Flowers orange.

AWARDS.

Bernard Kuhn, A.M. (c., s.) August 12, 1926. Raised by Messrs. Pfitzer and sent by Messrs. Bath.

Bronze Queen, H.C. (g.) August 12, 1926. Raised and sent by Messrs. Grullemans.

Orange Brilliant, H.C. (g.) August 12, 1926. Raised by Messrs. Grullemans and sent by Messrs. Bath, Netherlands Gladiolus Society, Dawkins, van Tubergen, Grullemans, Amos, Barr, R. Veitch, Dobbie, C. A. van Zanten.

BRONZE QUEEN (Grullemans), H.C.—3½ feet, branched, with 8 to 10 closely set flowers, 2 or 3 out at a time; flowers hooded, 2½ inches diameter, bright rich orange shaded bronze, margins somewhat wavy. Flowering from August 2.

ORANGE BRILLIANT (Bath, Netherlands Gladiolus Society, Dawkins, van Tubergen, Grullemans, Amos, Barr, R. Veitch, Dobbie, C. A. van Zanten), H.C.—4 feet, unbranched, with 12 to 14 closely set flowers, 3 out at a time; flowers 2½ inches diameter, hooded, orange-yellow suffused scarlet, lower petals primrose. Flowering from July 29.

BERNARD KUHN (Bath), A.M.—4 to 4½ feet, branched, with 13 to 15 closely set flowers, 4 or 5 out at a time; flowers 3 inches diameter, bright reddish-orange lower petals lemon-yellow, upper petal horizontal, margins somewhat wavy. Flowering from August 2.

Flowers pale pink on white.

AWARD.

ADA, A.M. (g.) August 12, 1926. Raised by Messrs. Grullemans and sent by Messrs. Grullemans and Messrs. Barr. Also sent by Messrs. Kelway as 'Advancement.'

ADA (Grullemans, Barr), **A.M.**—4 feet, branched with 14 to 16 closely set flowers; flowers $3\frac{1}{2}$ inches diameter, hooded, white flushed pale bluish-carmine, centre of lower petals carmine, margins somewhat wavy. Flowering from July 30. Also sent by Messrs. Kelway as 'Advancement.'

EURYDICE (Barr, Netherlands Gladiolus Society, van Tubergen, Dawkins, C. A. van Zanten, Dobbie).— $3\frac{1}{2}$ to $3\frac{3}{4}$ feet, branched, with 14 closely set flowers, 3 out at a time; flowers 3 inches diameter, pale rose-pink, veined carmine at centre of lower petals, hooded. Flowering from July 28.

MONCHSHALDE (Pfitzer).— $3\frac{1}{2}$ feet, unbranched, with 14 closely set flowers, 3 or 4 out at a time; flowers 3 inches diameter, bright rose-pink, lower petals cream, hooded. Flowering from August 3.

Flowers pink on cream.

AWARDS.

Malden's Blush, H.C. (g.) July 30, 1926. Raised by Messrs. Grullemans and sent by Messrs. R. Veitch, Barr, Grullemans, Webb, Dawkins, Netherlands Gladiolus Society, Bath, Dobbie.

Lascelles, H.C. (c., g.) August 29, 1927. Sent by Messrs. H. Prins of Wisbech.

COLUMBIA (Netherlands Gladiolus Society).—4 feet, branched, with 12 to 14 closely set flowers; flowers $3\frac{1}{2}$ inches diameter, very pale creamy-pink, upper petal horizontal. Flowering from July 30.

LASCELLES (Prins), **H.C.**—3 feet, branched with 10 widely spaced flowers; flowers $2\frac{1}{2}$ inches diameter, soft creamy-pink flaked darker, centre of lower petals lined cerise, upper petal horizontal. Flowering from August 10.

PALMYRA (van Tubergen).—4 feet, branched, with 12 to 14 closely set flowers, 3 out at a time; flowers $3\frac{1}{2}$ inches diameter, peach-pink, upper petal hooded. Flowering from July 14.

MAIDEN'S BLUSH (R. Veitch, Barr, Grullemans, Webb, Dawkins, Netherlands Gladiolus Society, Bath, Dobbie), **H.C.**—4 feet, branched, with 14 to 16 closely set flowers, 3 out at a time; flowers 4 inches diameter, peach-pink, upper petal horizontal. Flowering from July 22. Also sent by Messrs. van Tubergen, but this contained rogues.

HELEN OF TROY (Lowe & Gibson).— $3\frac{1}{2}$ feet, unbranched, with 12 closely set flowers; flowers $3\frac{1}{2}$ inches diameter, peach-pink on cream, hooded. Flowering from July 27.

MADAME PETAIN (Grullemans).— $3\frac{1}{2}$ feet, unbranched, with 14 closely set flowers, 3 out at a time; flowers $3\frac{1}{2}$ inches diameter, pale salmon-pink on cream, lower petals cream, hooded. Flowering from July 22.

PINK PEARL (Fleming).—3 to $3\frac{1}{2}$ feet, branched, with 10 closely set flowers, 2 out at a time; flowers 3 inches diameter, salmon-pink on cream, lower petals salmon-buff, hooded. Flowering from July 27.

ROSA BELLA (Dobbie).— $3\frac{1}{2}$ feet, branched, with 12 to 14 closely set flowers, 3 out at a time; flowers 3 inches diameter, salmon-pink on cream, lower petals speckled and lined crimson, hooded. Flowering from July 29.

NIGHTINGALE (Lowe & Gibson, Kunderd).—4 feet, branched, with 14 closely set flowers, 3 out at a time; flowers $3\frac{1}{2}$ inches diameter, pale old rose, lower petals pale creamy-pink, hooded, margins somewhat wavy. Flowering from July 28.

ASIA (Grullemans, Bath).—4 feet, unbranched, with 14 closely set flowers, 3 out at a time; flowers $2\frac{1}{2}$ inches diameter, old rose, lower petals pale cream, suffused and striped carmine at centre, hooded. Flowering from July 30.

JUNE (Dobbie).—3 feet, branched, with 9 to 10 medium-set flowers, 2 out at a time; flowers $2\frac{1}{2}$ inches diameter, bright creamy-pink, lower petals pale cream, hooded. Flowering from July 29.

REINE VICTORIA (Grullemans).—4 feet, unbranched, with 12 to 14 closely set flowers, 3 out at a time; flowers $2\frac{1}{2}$ inches diameter, bright rose on pale cream, lower petals pale cream lined deep rose at the centre, hooded. Flowering from July 28.

Flowers apricot.

AWARD.

Sylvia, H.C. (c., g.) August 5, 1927. Raised by Messrs. Deursen and sent by the Netherlands Gladiolus Society.

OTRANTO (Churcher).— $3\frac{1}{2}$ feet, branched, with 14 closely set flowers, 3 or 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, hooded, creamy-apricot, lower petals blotched crimson. Flowering from August 9.

ATALANTA (Webb, Dawkins, Bath, van Tubergen).—4 to $4\frac{1}{2}$ feet, with 12 closely set flowers, 3 out at a time; flowers 3 inches diameter, hooded, pinkish-apricot on cream, wings darker. Flowering from July 28.

SIR FRANCIS FOX (Kelway).— $3\frac{1}{2}$ to $3\frac{3}{4}$ feet, branched, with 11 to 13 medium-spaced flowers; flowers 3 inches diameter, apricot suffused salmon, upper petal horizontal. Flowering from July 25.

BLOEMENHOF (Prins).—24 inches, branched with 8 widely set flowers; flowers $2\frac{1}{2}$ inches diameter, apricot tinged carmine, lower petals lined carmine, upper petal horizontal. Flowering from August 8.

SYLVIA (Netherlands Gladiolus Society), H.C.— $3\frac{3}{4}$ feet, unbranched, with 14 closely set flowers; flowers 3 inches diameter, hooded, apricot-yellow, lower petals lemon-yellow. Flowering from August 4.

Flowers pink on yellow.

AWARDS.

Sphinx, A.M. (c., g.) August 5, 1927. Raised by Messrs. Krelage and sent by Messrs. Bath, Dawkins, Netherlands Gladiolus Society, van Tubergen, Dobbie.

Nydia, A.M. (c.) August 5, 1927. Raised by Messrs. Kunderd and sent by Messrs. W. J. Unwin of Histon, Cambs.

Nobe, H.C. (g.) August 12, 1926. Raised by Messrs. Krelage and sent by Messrs. Bath, Barr, van Tubergen, Dobbie.

Altair, H.C. (c.) August 5, 1927. Raised by Messrs. Kunderd and sent by Messrs. Bath, and Messrs. Kunderd of Goshen, U.S.A.

Clio, H.C. (g.) August 5, 1927. Raised by Messrs. Kunderd and sent by Major G. Churcher.

HEART OF FIRE (Kelway).— $4\frac{1}{2}$ feet, unbranched, with 13 medium spaced flowers; flowers $2\frac{1}{2}$ inches diameter, creamy-buff suffused salmon, hooded. Flowering from July 26.

OLLA RAMMENSTEIN (Pfitzer).—4 feet, branched, with 14 or 15 closely set flowers, 3 or 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, pale salmon-pink on yellow, centre of lower petals pale yellow, upper petal horizontal. Flowering from July 28.

PERFECTION (Prins).— $2\frac{1}{2}$ feet, branched, with 10 to 12 closely set flowers, 3 or 4 out at a time; flowers $2\frac{1}{2}$ inches diameter, pale salmon-pink on cream, flaked darker, centre of lower petals blotched carmine. Flowering from August 5.

NYDIA (Unwin), A.M.—4 feet, branched, with 14 to 16 closely set flowers, 3 or 4 out at a time; flowers 3 inches diameter, bright old rose on creamy-white, lower petals pale creamy-white; upper petal horizontal. Flowering from August 2.

GEORGE GORDON (Kelway).—4 to $4\frac{1}{2}$ feet, branched, with 14 medium spaced flowers, 3 or 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, cream suffused salmon-cerise, lower petals cream, upper petal horizontal. Flowering from July 28.

LADY JOAN VERNEY (Kelway).—4 feet, branched, with 16 closely set flowers, 4 or 5 out at a time; flowers $3\frac{1}{2}$ inches diameter, pale orange-buff suffused salmon, lower petals canary yellow, upper petal horizontal. Flowering from July 26.

SYLPH (Kelway).—Much like 'Lady Joan Verney.' Flowering from July 26.

IAN KELWAY (Kelway).—Much like 'Lady Joan Verney.' Flowering from July 26.

ELIA KELWAY (Kelway).— $3\frac{3}{4}$ to 4 feet, branched, with 16 closely set flowers; flowers 3 inches diameter, orange-buff flushed salmon, hooded. Flowering from July 26.

JAUNE D'ŒUF (Grullemans).—4 feet, branched, with 11 to 13 closely set flowers, 3 out at a time; flowers $2\frac{1}{2}$ inches diameter, hooded, creamy-primrose flushed pale carmine, lower petals primrose. Flowering from July 28.

APRICOT (Grullemans).— $3\frac{3}{4}$ to 4 feet, branched, with 12 to 14 closely set flowers, 3 out at a time; flowers $3\frac{1}{2}$ inches diameter, creamy-primrose, faintly flushed carmine, lower side petals pale yellow, hooded. Flowering from July 28.

LATONIA (Bath, Netherlands Gladiolus Society, van Tubergen).— $3\frac{3}{4}$ feet, branched, with 12 to 14 closely set flowers, 3 out at a time; flowers $2\frac{1}{2}$ inches diameter, hooded, orange-pink, striped carmine on lower petals. Flowering from July 26.

ALTAIR (Bath, Kunderd), H.C.—4 to $4\frac{1}{2}$ feet, branched, with 14 to 16 closely set flowers, 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, bright orange-pink, speckled carmine on lower petals, upper petal horizontal. Flowering from July 27.

HERMIONE (van Tubergen, Webb, Barr, Dawkins, Bath, Dobbie).—4 to $4\frac{1}{2}$ feet, branched, with 12 to 14 closely set flowers, 3 or 4 out at a time; flowers 3 inches diameter, hooded, bright salmon-orange, striped and blotched crimson on lower petals. Flowering from July 26. Also sent under the name 'Yellow Prince' by Messrs. Bath in error.

SPHINX (Bath, Dawkins, Netherlands Gladiolus Society, van Tubergen, Dobbie), A.M.— $3\frac{1}{2}$ feet, branched, with 10 closely set flowers, 3 or 4 out at a time; flowers 3 inches diameter, hooded, bright rich salmon-orange, striped and suffused magenta on lower petals, margins somewhat wavy. Flowering from July 26.

NIobe (Bath, Barr, van Tubergen, Dobbie), H.C.— $3\frac{1}{2}$ feet, branched, with 12 closely set flowers, 3 out at a time; flowers $3\frac{1}{2}$ inches diameter, rich salmon-orange, lower petals with central magenta lines, upper petal horizontal, margins wavy. Flowering from July 27.

LA SAVIÈRE (Bath).—Like 'Niobe.' Flowering from July 28.

MADAME HERRIOT (Grulleman).—4 feet, mostly branched, with 11 closely set flowers, 3 out at a time; flowers $2\frac{1}{2}$ inches diameter, hooded, bright salmon-orange. Flowering from July 14.

ROSALIE (Bath, Kunderd).— $3\frac{3}{4}$ feet; unbranched, with 14 closely set flowers; 3 out at a time; flowers $3\frac{1}{2}$ inches diameter, hooded, rich orange-salmon, lower petals primrose, central red lines on lower petals, margins somewhat wavy. Flowering from July 30.

CLIO (Churcher), H.C.— $3\frac{1}{2}$ feet, branched, with 10 to 12 closely set flowers, 3 out at a time; flowers 3 inches diameter, hooded, rich salmon-orange, lower petals orange-buff, margins somewhat wavy. Flowering from July 30. Distinct from the variety sent under this name by Messrs. Nieuwenhuis.

PAPILIO (Bath).— $3\frac{1}{2}$ to $3\frac{3}{4}$ feet, branched, with 10 to 12 closely set flowers, 3 out at a time; flowers 3 inches diameter, rich salmon-orange, striped crimson at centre of lower petals, upper petal horizontal, margins somewhat wavy. Flowering from July 28.

COUNTRESS OF GOSFORD (Kelway).—4 feet, branched, with 14 closely set flowers; flowers $3\frac{1}{2}$ inches diameter, bright orange flushed carmine, lower petals pale lemon, blotched and veined carmine, hooded. Flowering from July 28.

COSMOS (Barr, Grulleman).— $3\frac{1}{2}$ feet, unbranched, with 8 to 10 widely set flowers, 3 out at a time; flowers $2\frac{1}{2}$ inches diameter, much hooded, orange flushed carmine, lower petals lined scarlet. Flowering from July 26.

CAPTAIN STONE (Kelway).— $3\frac{1}{2}$ to $3\frac{3}{4}$ feet, unbranched, with 16 closely set flowers, 3 or 4 out at a time; flowers 3 inches diameter, hooded, bright orange flushed and flaked salmon, lower petals apricot. Flowering from July 28.

L'UNIQUE (Grulleman).— $3\frac{1}{2}$ to 4 feet, branched, with 14 to 16 closely set flowers, 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, dull pinkish-carmine on creamy-yellow, centre of lower petals primrose. Upper petal horizontal. Flowering from July 28.

MANDARIN (Churcher).—4 feet tall, branched, with 14 or 15 closely set flowers, 3 out at a time; flowers $3\frac{1}{2}$ inches diameter, rich cerise on cream, lower petals creamy-yellow blotched scarlet, upper petal horizontal. Flowering from August 2.

Flowers salmon.

AWARDS.

Topaz, A.M. (c. g.) August 5, 1927. Raised by Messrs. Kunderd and sent by Messrs. Barr and Bath.

Marion Cran, H.C. (g.) August 12, 1926. Raised and sent by Messrs. Kelway.

Inspector Ludewig, H.C. (g.) August 12, 1926. Raised by Messrs. Pfitzer and sent by Messrs. Bath.

Arion, H.C. (g.) July 30, 1926. Raised by Messrs. Kunderd and sent by Messrs. Bath.

Allee Tiplady, H.C. (g.) August 12, 1926. Sent by Messrs. Bath, Netherlands Gladiolus Society, Amos, Barr, Dobbie, and Messrs. C. A. van Zanten of Heemskerk, Holland.

INSPECTOR LUDEWIG (Bath), H.C.—4½ feet, branched, with 16 to 18 closely set flowers, 3 or 4 out at a time; flowers 4 inches diameter, rich salmon-apricot, lower petal apricot blotched carmine, upper petal horizontal. Flowering from July 27.

MARION CRAN (Kelway), H.C.—4 feet, unbranched, with 12 closely set flowers, 3 or 4 out at a time; flowers 3½ inches diameter, somewhat hooded, pale cream suffused pale salmon-pink, lower petals pale primrose, margins somewhat wavy. Flowering from July 26.

TOPAZ (Barr, Bath), A.M.—4 feet, branched, with 14 to 16 very closely set flowers, 3 or 4 out at a time; flowers 3½ inches diameter, buff suffused and flaked salmon, centre of lower petals lined red, upper petal horizontal, margins wavy. Flowering from July 28.

WAHA (Bath).—3½ feet, branched, with 12 to 14 closely set flowers; flowers 3½ inches diameter, rich creamy salmon, upper petal horizontal, margins wavy. Flowering from August 2.

GOLDEN TINGE (Kunderd).—4 feet, unbranched, with 12 to 14 closely set flowers, 3 or 4 out at a time; flowers 3½ inches diameter, pale orange-salmon, lower petals pale lemon lined red, upper petal horizontal, margins somewhat wavy. Flowering from August 3.

TWINKLES (Kunderd).—3 to 3½ feet, branched, with 14 closely set flowers, 3 out at a time; flowers 3½ inches diameter, salmon on cream, lower petals salmon-buff lined scarlet, upper petal horizontal, margins wavy. Flowering from July 28.

ARLON (Bath), H.C.—3 to 3½ feet, branched, with 10 to 12 closely set flowers, 3 or 4 out at a time; flowers 3½ inches diameter, bright rich salmon, lower petals veined crimson, hooded, margins somewhat wavy. Flowering from July 26.

VANESSA (van Tubergen, Bath, Dawkins, Webb).—3½ feet, branched, with 10 or 11 closely set flowers, 3 out at a time; flowers 2½ inches diameter, hooded, bright salmon on cream, suffused magenta at centre of lower petals. Flowering from July 28. Also sent under the name 'Hesperia' by Messrs. Webb in error.

ALICE TIPLADY (Bath, Netherlands Gladiolus Society, Amos, Barr, Dobbie, C. A. van Zanten), H.C.—3½ feet, unbranched, with 12 or 13 very closely set flowers, 4 out at a time; flowers 3½ inches diameter, bright rich salmon on cream, lower petals lined red, upper petal horizontal, margins somewhat wavy. Flowering from August 2.

LA DORMOISE (Bath).—4 feet, somewhat branched, with 14 or 15 closely set flowers, 4 out at a time; flowers 3½ inches diameter, salmon on cream, lower petal cream, margins somewhat wavy. Flowering from July 30.

YEOMAN (Bath).—4 feet, unbranched, with 14 closely set flowers, 3 out at a time; flowers 3½ inches diameter, hooded, bright salmon, lower petals blotched crimson at centre, margins somewhat wavy. Flowering from August 2.

ORIENTAL (Netherlands Gladiolus Society, C. A. van Zanten).—3½ feet, branched, with 9 or 10 closely set flowers, 3 out at a time; flowers 3 inches diameter, hooded, rich deep salmon lined red on lower petals. Flowering from July 30.

JAN STEEN (Netherlands Gladiolus Society).—34 inches, unbranched, with 10 closely set flowers, 3 out at a time; flowers 2½ inches diameter, hooded, dark salmon, centre of lower petal primrose blotched crimson. Flowering from August 2.

LAETITIA (Barr, van Tubergen, Netherlands Gladiolus Society, Bath).—3½ feet, branched, with 12 closely set flowers, 3 out at a time; flowers 2½ inches diameter, hooded, rich rosy-salmon, suffused crimson at centre of lower petals. Flowering from July 26.

Flowers cerise.

AWARDS

Rosaura, A.M. (g.) August 5, 1927. Raised by Messrs. Krelage and sent by Messrs. van Tubergen, Netherlands Gladiolus Society, Bath, Dobbie; also sent by Messrs. Unwin as 'Rosandra' which shares the award.

Iearus, H.C. (g.) August 5, 1927. Raised by Messrs. Krelage and sent by Messrs. Bath, Netherlands Gladiolus Society, C. A. van Zanten.

Mrs. George Kellner, H.C. (g.) July 30, 1926. Raised and sent by Messrs. Lowe & Gibson, Crawley Down, Sussex.

Salmones, H.C. (g.) July 30, 1926. Raised by Messrs. Krelage and sent by Messrs. Bath, Webb, van Tubergen, Netherlands Gladiolus Society, Barr, R. Veitch, Dobbie.

Psyche, H.C. (g.) July 30, 1926. Raised by Messrs. Krelage and sent by Messrs. Netherlands Gladiolus Society, Webb, van Tubergen, Bath.

Karl Volkert, H.C. (c., g.) August 5, 1927. Raised by Messrs. Pfitzer and sent by them and Messrs. Bath.

REV. PREBENDARY HAMLET (Kelway).—4 feet, branched, with 14 or 15 closely set flowers, 3 out at a time; flowers 3 inches diameter, hooded, salmon shaded red or cream, lower petals salmon-buff, margins somewhat wavy. Flowering from July 28.

ROSE QUEEN (R. Veitch).—3½ feet, unbranched, with 11 or 12 closely set flowers, 3 out at a time; flowers 3½ inches diameter, pale rosy-cerise on cream, lower petal cream. Flowering from July 22.

ICARUS (Bath, Netherlands Gladiolus Society, C. A. van Zanten), H.C.—4½ feet, branched, with 13 closely set flowers, 3 out at a time; flowers 3 inches diameter, hooded, salmon shaded cerise, lower petals veined crimson. Flowering from July 28.

COLIBRI (van Tubergen).—3½ feet, branched, with 11 to 13 closely set flowers, 5 out at a time; flowers 2½ inches diameter, salmon-cerise, upper petal horizontal. Flowering from July 30. Burns badly.

MRS. GEORGE KELLNER (Lowe & Gibson), H.C.—3½ feet, branched, with 15 to 17 very closely set flowers, 3 or 4 out at a time; flowers 3½ inches diameter, salmon-cerise, lower petals flushed crimson, hooded. Flowering from July 26.

ATHENE (Kunderd).—3½ feet, branched, with 14 to 16 closely set flowers, 3 out at a time; flowers 2½ inches diameter, hooded, bright salmon-cerise, lower petals streaked crimson. Flowering from August 3.

PERSEUS (Churcher).—4 to 4½ feet, branched, with 11 or 12 closely set flowers, 3 or 4 out at a time; flowers 3½ inches diameter, bright salmon-cerise, upper petal horizontal, margins somewhat wavy. Flowering from July 28.

HESPERIA (Dawkins, Bath, van Tubergen).—3½ to 3½ feet, branched, with 12 or 13 closely set flowers, 3 out at a time; flowers 3½ inches diameter, rich salmon-cerise, centre of lower petals lined yellow, hooded; margins somewhat wavy. Flowering from July 22.

PEACH BLOSSOM (Kelway).—3½ feet, somewhat branched, with 14 closely set flowers, 3 or 4 out at a time; flowers 3½ inches diameter, rich salmon-cerise, lower petals streaked crimson, upper petal horizontal, margins somewhat wavy. Flowering from July 26.

DELIGHTFUL (Kelway).—3½ feet, branched, with 14 or 15 very closely set flowers, 3 out at a time; flowers 3½ inches diameter, rich salmon-cerise, throat suffused lemon-buff, upper petal horizontal, margins somewhat wavy. Flowering from July 30.

SALMONEA (Bath, Webb, van Tubergen, Netherlands Gladiolus Society, Barr, R. Veitch, Dobbie), H.C.—3½ feet, branched, with 12 closely set flowers, 4 out at a time; flowers 4 inches diameter, hooded, rich salmon-scarlet, inside paler. Flowering from July 27.

ROSAURA (van Tubergen, Netherlands Gladiolus Society, Bath, Dobbie), A.M.—3½ feet, branched, with 14 to 16 closely set flowers, 3 or 4 out at a time; flowers 3½ inches diameter, hooded, rich rosy-cerise, centre of lower petals blotched magenta. Flowering from August 28. Also sent by Messrs. Unwin as 'Rosandra.'

PSYCHE (Netherlands Gladiolus Society, Webb, van Tubergen, Bath), H.C.—3½ feet, branched, with 10 to 12 closely set flowers, 3 or 4 out at a time; flowers rich cherry-red, lower petals lined scarlet at centre, hooded. Flowering from July 22.

TODAY (Kunderd).—4 feet, branched, with 14 or 15 closely set flowers, 3 out at a time; flowers 3½ inches diameter, rich cerise, centre of lower petals suffused orange speckled red, upper petal horizontal, margins somewhat wavy. Flowering from July 30.

KARL VOLKERT (Pfitzer, Bath), H.C.—4 to 4½ feet, branched, with 14 to 15 very closely set flowers, 5 or 6 out at a time; flowers 3½ inches diameter, rich cherry-cerise, centre of lower petal cream veined dull carmine, upper petal horizontal, margins somewhat wavy. Flowering from July 30.

J. P. KOEN (Netherlands Gladiolus Society).—3 feet, branched, with 11 closely set flowers, 2 out at a time; flowers 3½ inches diameter, somewhat hooded, rich cherry-red, centre of lower petals primrose speckled scarlet, margins somewhat wavy. Flowering from July 28.

Flowers orange-scarlet.

AWARDS.

Attalia, A.M. (g.) August 5, 1927. Raised by Messrs. Krelage and sent by Messrs. Amos and Bath.

Clio, A.M. (g.) July 30, 1926. Raised and sent by Messrs. Nieuwenhuis.

Rev. J. Stubbs, A.M. (g.) July 30, 1926. Raised and sent by Messrs. Kelway.
Fire Queen, A.M. (s., g.) August 5, 1927. Raised by Messrs. Grullemans and sent by Messrs. R. Veitch and Barr.

L'Arques, H.C. (g.) July 30, 1926. Raised by Messrs. Vilmorin Andrieux and sent by Messrs. Bath.

VULCAN (Grullemans).—3½ feet, somewhat branched, with 12 to 14 medium spaced flowers, 4 out at a time; flowers 2½ inches diameter, hooded, orange suffused scarlet, lower petals canary yellow. Flowering from July 27.

ATTALIA (Amos, Bath), A.M.—3½ to 4 feet, slender, branched, with 10 closely set flowers, 3 out at a time; flowers 3½ inches diameter, hooded, bright pale orange-scarlet, lower petals striped cream at centre. Flowering from July 30.

RED ROVER (Kelway).—4½ feet, branched, with 14 or 15 closely set flowers, 4 out at a time; flowers 3 inches diameter, orange-scarlet, lower petals striped crimson at centre, upper petal horizontal. Flowering from August 3.

FIRE QUEEN (R. Veitch, Barr), A.M.—5 feet, branched, with 16 closely set flowers, 3 or 4 out at a time; flowers 3½ inches diameter, bright orange-scarlet, centre of lower petals lemon speckled and striped scarlet, upper petal horizontal. Flowering from August 3.

SYLPHIDE (Grullemans).—3½ feet, branched, with 10 to 12 medium spaced flowers, 3 out at a time; flowers 3½ inches diameter, bright orange-scarlet, flaked scarlet at tips of petals, upper petal horizontal. Flowering from July 6.

SCARLET BEDDER (Salbach).—32 inches, unbranched, with 10 or 11 closely set flowers, 2 or 3 out at a time; flowers 3½ inches diameter, hooded, bright orange-scarlet, margins crenate. Flowering from July 28.

HERCULES (Netherlands Gladiolus Society).—3 to 3½ feet, branched, with 12 closely set flowers, 3 out at a time; flowers 3½ inches diameter, hooded, bright rich orange-scarlet, lower petals orange, margins somewhat wavy. Flowering from July 14.

L'ARQUES (Bath), H.C.—4 feet, unbranched, with 12 or 13 very closely set flowers, 3 out at a time; flowers 3½ inches diameter, rich orange-scarlet, blotched primrose at centre of lower petals, upper petal horizontal. Flowering from July 26.

CLIO (Nieuwenhuis), A.M.—3½ feet, branched, with 9 closely set flowers, 3 or 4 out at a time; flowers 2½ inches diameter, hooded, rich orange-scarlet. Flowering from July 26. Distinct from the variety sent by Major Churcher under this name.

ZENOBIA (Bath).—4½ feet, branched, with 14 medium spaced flowers, 4 out at a time; flowers 2½ inches diameter, rich orange-scarlet. Flowering from July 26.

FEU ARDENT (Grullemans).—4 feet, branched, with 16 or 17 closely set flowers, 3 out at a time; flowers 3½ inches diameter, hooded, rich deep orange scarlet. Flowering from July 27.

REV. J. STUBBS (Kelway), A.M.—4½ feet, unbranched, with 12 to 14 closely set flowers, 3 out at a time; flowers 3½ inches diameter, hooded, deep rich orange-scarlet, margins somewhat wavy. Flowering from July 24.

Flowers scarlet.

AWARDS.

Vinula, A.M. (g.) July 30, 1926. Raised by Messrs. Krelage and sent by Messrs. van Tubergen, Netherlands Gladiolus Society, and C. A. van Zanten.

Daphne, H.C. (g.) July 30, 1926. Raised by Messrs. Krelage and sent by Messrs. Dobbie, Netherlands Gladiolus Society, and Bath.

ADONIS (Bath).—3 to 3½ feet, branched, with 9 to 11 medium spaced flowers, 3 out at a time; flowers 2½ inches diameter, hooded, scarlet, centre of lower petals darker. Flowering from July 28.

SCARLETTA (R. Veitch, Barr, van Tubergen, Webb, Dawkins, Netherlands Gladiolus Society, Bath, Dobbie, C. A. van Zanten, Morris).—3½ feet, branched, with 10 to 12 closely set flowers, 3 out at a time; flowers 3 inches diameter, hooded, scarlet, margins somewhat wavy. Flowering from August 4.

SATYR (Netherlands Gladiolus Society, Bath).—3½ feet, branched, with 10 to 12 closely set flowers, 3 out at a time; flowers 3 inches diameter, scarlet, lower petals paler, upper petal horizontal, margins somewhat wavy. Flowering from July 30.

KING OF THE SCARLETS (Netherlands Gladiolus Society).—3½ to 3½ feet, branched, with 10 to 12 closely set flowers, 3 out at a time; flowers 3 inches

diameter, rich scarlet, hooded, margins somewhat wavy. Flowering from August 2.

WOODCOTE (Amos, Churcher).— $3\frac{1}{2}$ to $3\frac{3}{4}$ feet, branched, with 7 to 9 closely set flowers, 3 out at a time; flowers $3\frac{1}{2}$ inches diameter, rich scarlet, centre of lower petals primrose speckled scarlet, upper petal horizontal. Flowering from July 28.

ALMA GLUCK (Bath).—Like 'Woodcote.'

DAPHNE (Dobbie, Netherlands Gladiolus Society, Bath), **H.C.**— $3\frac{1}{2}$ feet, branched, with 10 to 11 flowers, closely set, 3 out at a time; flowers 3 inches diameter, hooded, rich scarlet, broad crimson line at the centre of the lower petal, margins somewhat wavy. Flowering from July 28.

FIREFLY (Bath).— $3\frac{1}{2}$ feet, branched, with 11 or 12 closely set flowers, 3 out at a time; flowers 3 inches diameter, rich scarlet, lower petals striped cream, upper petal horizontal. Flowering from July 29.

VINULA (van Tubergen, Netherlands Gladiolus Society, C. A. van Zanten), **A.M.**— $3\frac{1}{2}$ feet, branched, with 10 to 12 closely spaced flowers, 3 out at a time; flowers 3 inches diameter, dark rosy-scarlet, upper petal horizontal. Flowering from July 23.

VERMILION SCARLET (C. A. van Zanten).— $2\frac{1}{2}$ feet, branched, with 14 medium spaced flowers, 3 out at a time; flowers $3\frac{1}{2}$ inches diameter, crimson-scarlet, upper petal hooded. Flowering from August 5.

Flowers crimson.

AWARD.

Scarlet Cardinal, A.M. (g.) August 12, 1926. Raised by Messrs. Krelage and sent by Messrs. van Tubergen, Nieuwenhuis, Netherlands Gladiolus Society, Dobbie, Bath, and C. A. van Zanten.

GLORY (Netherlands Gladiolus Society).— $3\frac{1}{2}$ feet, slender, unbranched, with 10 or 11 closely set flowers, 2 or 3 out at a time; flowers $3\frac{1}{2}$ inches diameter, hooded, crimson-scarlet flaked darker, margins somewhat wavy. Flowering from August 17.

SCARLET CARDINAL (van Tubergen, Nieuwenhuis, Netherlands Gladiolus Society, Dobbie, Bath, C. A. van Zanten), **A.M.**—3 to $3\frac{1}{2}$ feet, branched, with 10 or 11 closely set flowers, 3 or 4 out at a time; flowers 4 inches diameter, hooded, crimson-scarlet, narrow central cream line on lower petals, margins somewhat wavy. Flowering from July 30.

Flowers purple.

GRACEFUL (Fleming).—4 to $4\frac{1}{2}$ feet, branched, with 16 very closely set flowers, 3 or 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, rich magenta flaked darker, upper petal horizontal. Flowering from August 2.

TAURUS (Kunderd).— $3\frac{1}{2}$ feet, branched, with 14 very closely set flowers, 3 or 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, hooded, purplish-magenta flaked darker, margins somewhat wavy. Flowering from August 2.

CLASS II.—*Primulinus Grandiflorus* Types.

Flowers yellow.

AWARDS.

La Lys, A.M. (g.) August 12, 1926. Raised by Messrs. Vilmorin Andrieux and sent by Messrs. Bath.

Butterboy, A.M. (e., g., c.) August 5, 1927. Raised by Messrs. Kunderd and sent by Messrs. Kunderd, Bath, Lowe & Gibson of Crawley Down, Sussex.

Gelyee, A.M. (e., g.) August 5, 1927. Raised and sent by Major G. Churcher.

La Vezouze, H.C. (g.) August 5, 1927. Raised by Messrs. Vilmorin Andrieux and sent by Messrs. Bath.

YELLOW GLORY (Grullemans).— $3\frac{1}{2}$ to $3\frac{3}{4}$ feet, unbranched, with 14 closely set flowers, 3 or 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, pale cream, lower petals cream striped cerise; margins somewhat wavy. Flowering from July 30.

MARIGOLD (Kunderd).—4 feet, branched, with 12 to 14 closely set flowers, 3 out at a time; flowers 4 to $4\frac{1}{2}$ inches diameter, pale cream, reverse streaked magenta, upper petal horizontal, margins wavy. Flowering from July 31.

LA LYS (Bath), A.M.—4 to 4½ feet; branched, with 12 or 13 closely set flowers, 3 out at a time; flowers 4 inches diameter, cream, upper petal horizontal. Flowering from July 26.

OLO (Kunderd)—5 feet, branched, with 16 very closely set flowers, 3 or 4 out at a time; flowers 4 inches diameter, creamy-yellow, lower petals primrose, upper petal horizontal, margins much waved. Flowering from August 5.

BUTTERBOY (Kunderd, Bath, Lowe & Gibson), A.M.—4 feet, branched, with 12 to 14 medium set flowers, 3 or 4 out at a time; flowers 3½ to 4 inches diameter, soft creamy-yellow, centre of lower petals lined reddish-brown, hooded. Flowering from July 20.

MR. JOHAN SPOOR (Grullemans).—3 to 4 feet, branched, with 9 to 14 very closely set flowers, 3 or 4 out at a time; flowers 3½ to 4 inches diameter, rich creamy-yellow, upper petal horizontal. Flowering from August 12.

GELYCE (Churcher), A.M.—4 feet, branched, with 12 medium set flowers, 3 out at a time; flowers 4 inches diameter, sulphur self without trace of any throat colour, upper petal horizontal. Flowering from July 29.

LA VEZOUZE (Bath), H.C.—4½ feet, branched, with 13 closely set flowers, 3 out at a time; flowers 4 inches diameter, pale primrose, upper petal horizontal. Flowering from July 20.

Flowers cream suffused pink.

AWARD.

Sunnymede, A.M. (g.) August 12, 1927. Raised by Messrs. Fischer and sent by Major Churcher.

SUNNYMEDE (Churcher), A.M.—4½ feet, branched, with 18 closely set flowers, 5 or 6 out at a time; flowers 3½ to 3¾ inches diameter, creamy-buff shaded pink, lower petals blotched crimson, upper petal hooded. Flowering from August 3.

PRIDE OF HUISH (Kelway).—3½ feet, unbranched, with 8 to 10 closely set flowers; flowers 3½ to 4½ inches diameter, hooded, creamy-yellow suffused and flaked salmon, lower petals yellow. Flowering from August 2.

Flowers apricot and pink.

AWARDS.

Ada de Poy, A.M. (g.) August 5, 1927. Raised and sent by Messrs. Carl Salbach of Berkeley, California, U.S.A.

Buenos Ayres, H.C. (g.) August 12, 1926. Raised and sent by Messrs. Pfitzer of Stuttgart, Germany.

KERENSKI (Grullemans).—4 feet, branched, with 16 closely set flowers, 4 or 5 out at a time; flowers 4 inches diameter, hooded, pale apricot flushed pink, lower petals pale cream lined carmine. Flowering from August 8.

TEA ROSE (Grullemans).—3½ to 3¾ feet, branched, with 16 flowers, 3 or 4 out at a time; flowers 3½ inches diameter, pale apricot flushed pale carmine, lower petals cream lined pink. Flowering from August 6.

BUENOS AYRES (Pfitzer), H.C.—4 to 4½ feet, strong, branched, with 16 crowded flowers, 4 out at a time; flowers 4½ inches diameter, apricot suffused and flaked rich salmon, centre of lower petals apricot, upper petal horizontal, margins somewhat wavy. Flowering from August 8.

ADA DE POY (Salbach), A.M.—4½ feet, branched, with 14 or 15 closely set flowers; flowers 3½ to 4½ inches diameter, hooded, apricot suffused pale salmon, lower petals apricot, margins somewhat wavy. Flowering from August 7.

DR. KARL OCHS (Konynenburg & Mark, Pfitzer).—4 feet, branched, with 16 closely set flowers; flowers 3½ to 4½ inches diameter, apricot suffused pale carmine, blotched carmine at centre of lower petal; upper petal horizontal. Flowering from August 2.

Flowers yellow and pink.

AWARDS.

Revue, A.M. (c., s., g.) August 12, 1927. Raised by Messrs. Glad Bill and sent by Major G. Churcher.

Walter Bloom, A.M. (c.) August 12, 1926. Raised by Messrs. Pfitzer and sent by them and Messrs. Bath.

Pinkie, A.M. (g.) August 12, 1926. Raised and sent by Messrs. Kelway.

Treelome, H.C. (g.) August 12, 1926. Raised and sent by Mr. W. Leonard S. Loat of Mevagissey, Cornwall.

Ernest Zahn, H.C. (g.) August 12, 1926. Raised by Messrs. Pfitzer and sent by Messrs. Pfitzer and Bath.

Ming Toy, H.C. (g.) August 5, 1927. Raised by Messrs. Kunderd and sent by them and Major G. Churcher.

Anamosa, H.C. (g.) August 12, 1926. Raised by Messrs. Kunderd and sent by Messrs. Bath.

Copper Bronze, H.C. (g.) August 5, 1927. Raised and sent by Messrs. Kunderd.

Arden, H.C. (g.) August 12, 1927. Raised by Messrs. Kunderd and sent by them and Messrs. Bath.

Rose Lulsante, H.C. (g.) August 12, 1926. Raised by Messrs. Grullemans and sent by Messrs. Barr, Amos, Dobbie, Bath.

REVUE (Churcher), A.M.— $4\frac{1}{2}$ to 5 feet, branched, with 11 to 13 very closely set flowers, 3 out at a time; flowers $4\frac{1}{2}$ inches diameter, pale cream suffused cerise at tips with central cream line, upper petal horizontal, margins wavy. Flowering from August 4.

TRELOCME (Loat), H.C.—4 feet, branched, with 14 to 17 crowded flowers, 4 or 5 out at a time; flowers 4 inches diameter, pale primrose, margins suffused cerise, lower petals blotched rich crimson, upper petal horizontal, margins somewhat wavy. Flowering from July 30.

ERNEST ZAHN (Bath, Pfitzer), H.C.— $3\frac{1}{2}$ feet, branched, with 16 closely set flowers, 3 or 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, rich yellow, margins suffused cerise, centre of flower petals rich yellow, upper petal horizontal. Flowering from August 2.

MING TOY (Kunderd, Churcher), H.C.— $4\frac{1}{2}$ to 5 feet, branched, with 14 to 16 very closely set flowers, 3 or 4 out at a time; flowers $4\frac{1}{2}$ inches diameter, creamy-orange pink on yellow, centre of lower petals creamy-yellow, upper petal horizontal, margins wavy. Flowering from July 28.

ANAMOSA (Bath), H.C.— $4\frac{1}{2}$ feet, branched, with 16 to 17 very closely set flowers, 4 out at a time; flowers 4 inches diameter, salmon-pink on orange, lower petals salmon-buff suffused crimson, upper petal horizontal. Flowering from July 30.

WALTER BLOEM (Pfitzer, Bath), A.M.— $3\frac{1}{2}$ to 4 feet, branched, with 16 to 18 closely set flowers, 4 out at a time; flowers $3\frac{1}{2}$ to 4 inches diameter, bright rich orange-pink, centre of lower petals lemon flushed salmon, upper petal horizontal, margins somewhat wavy. Flowering from August 2.

COPPER BRONZE (Kunderd), H.C.—4 feet, unbranched, with 12 very closely set flowers, 3 out at a time; flowers $4\frac{1}{2}$ inches diameter, rich dull coppery-salmon flaked bronzy-magenta, hooded, margins somewhat wavy. Flowering from August 2.

ARDEN (Kunderd, Bath), H.C.—4 feet, branched, with 14 or 15 very closely set flowers, 4 out at a time; flowers $3\frac{1}{2}$ to 4 inches diameter, bright cherry-red on cream, upper petal horizontal, margins wavy. Flowering from July 27.

PINKIE (Kelway), A.M.—4 feet, branched, with 14 very closely set flowers, 3 or 4 out at a time; flowers 4 inches diameter, cerise-pink on cream, lower petals pale lemon, upper petal horizontal. Flowering from July 27.

ROSE LUISANTE (Barr, Amos, Bath, Dobbie), H.C.— $4\frac{1}{2}$ feet, branched, with 13 or 14 closely set flowers, 3 or 4 out at a time; flowers $4\frac{1}{2}$ inches diameter, rich rosy-cerise on pale cream, lower petals pale cream, upper petal horizontal, margins somewhat wavy. Flowering from July 27.

Flowers orange and salmon.

AWARDS.

Ethelyn, A.M. (c., g.) August 4, 1927. Raised by Messrs. Fischer and sent by Major G. Churcher.

L'Authie, H.C. (g.) August 12, 1926. Raised by Messrs. Vilmorin Andrieux and sent by Messrs. Bath.

L'AUTHIE (Bath), H.C.—4 feet, branched, with 12 or 13 very closely set flowers, 4 or 5 out at a time; flowers $3\frac{1}{2}$ inches diameter, rich pale salmon on orange, centre of lower petals orange, upper petal horizontal, margins wavy. Flowering from July 30.

SUNRISE (Bath).— $3\frac{1}{2}$ to $3\frac{3}{4}$ feet, branched, with 14 or 15 closely set flowers, 4 out at a time; flowers 4 inches diameter, orange suffused salmon, upper petal horizontal. Flowering from July 26.

ETHELYN (Churcher), A.M.—4 feet, branched, with 13 or 14 closely set flowers, 3 or 4 out at a time; flowers $3\frac{1}{2}$ to 4 inches diameter, bright orange-buff shaded pale salmon, centre of lower petals pale chrome-yellow, upper petal horizontal. Flowering from July 28.

Flowers pink on cream.

AWARDS.

Myrtle, H.C. (g.) August 12, 1927. Raised by Messrs. Kunderd, sent by Messrs. Grullemans, Dobbie, and Bath.

Enchantress, H.C. (c., g.) August 5, 1927. Raised and sent by Messrs. Kunderd.

Dorothy Wheeler, H.C. (g.) August 12, 1926. Raised by Messrs. Kunderd and sent by Messrs. Dobbie, Bath.

DELICATA (Bath, Grullemans).—3½ feet, unbranched, with 12 to 14 closely set flowers, 3 or 4 out at a time; flowers 3½ inches diameter, soft pink on cream, hooded. Flowering from August 11.

MYRTLE (Bath, Grullemans, Dobbie), **H.C.**—3½ feet, branched, with 14 to 16 very closely set flowers, 4 or 5 out at a time; flowers 3 inches diameter, bright rosy-pink, centre of lower petals lined red, upper petal horizontal, margins somewhat wavy. Flowering from August 8.

ASTARTE (Hilbers).—3½ feet, branched, with 14 closely set flowers, 3 out at a time; flowers 3½ inches diameter, hooded, pale creamy-pink, lower petals cream, margins somewhat wavy. Flowering from July 27.

ANNIE WIGMAN (C. A. van Zanten).—4 feet, branched, with 14 to 16 closely set flowers, 4 or 5 out at a time; flowers 3½ inches diameter, pale creamy-pink, lower petals blotched deep carmine, hooded. Flowering from July 30.

TEA ROSE (Fleming).—3½ to 3¾ feet, branched, with 12 to 14 closely set flowers, 3 out at a time; flowers 4 inches diameter, pale cream suffused and flaked pale rose-pink, lower petals cream, hooded. Flowering from July 28.

ENCHANTRESS (Kunderd).—4 to 4½ feet, unbranched, with 16 to 18 very closely set flowers, 4 out at a time; flowers 3½ to 4 inches diameter, pale rose-pink on creamy-white, centre of lower petals creamy-buff, upper petal horizontal, margins somewhat wavy. Flowering from July 26.

CYGNUS (Kunderd).—4½ to 5 feet, unbranched, with 16 crowded flowers, 4 out at a time; flowers 4 inches diameter, bright pale rose-pink, lower petals creamy-buff, upper petal horizontal, margins somewhat wavy. Flowering from August 3.

DOROTHY WHEELER (Dobbie, Bath), **H.C.**—4½ feet, strong, unbranched, with 16 very closely set flowers, 4 out at a time; flowers 3½ inches diameter, bright rose-pink on pale cream, centre of lower petals apricot striped carmine, upper petal horizontal. Flowering from August 10.

FREIHERR LUDEWIG VON MESDAY (Pfitzer).—3½ feet, branched, strong, with 16 to 18 crowded flowers, 4 or 5 out at a time; flowers 4 inches diameter, bright rose-pink on creamy-white, centre of lower petals creamy-buff, upper petal horizontal, margins wavy. Flowering from August 10.

LA MÈUSE (Bath).—4 to 4½ feet, unbranched, with 16 closely set flowers, 3 or 4 out at a time; flowers 4 inches diameter, hooded, pale amaranth-pink, centre of lower petals pale cream. Flowering from August 8.

LA BETHUNE (Bath).—3½ feet, branched, with 14 closely set flowers, 3 out at a time; flowers 3½ to 4 inches diameter, hooded, rosy amaranth, centre of lower petals pale lemon. Flowering from July 30.

LILAC OLD ROSE (Kunderd).—4½ feet, strong, unbranched, with 16 very closely set flowers, 3 or 4 out at a time; flowers 4 inches diameter, pale old rose, lower petals tinged cream with a central red line, upper petal horizontal, margins somewhat wavy. Flowering from August 2.

VIRGINIA LOU (Kunderd).—4 feet, branched, with 14 very closely set flowers arranged in two rows, 3 or 4 out at a time; flowers 4 inches diameter, bright old rose with a central cream stripe on lower petals, upper petal horizontal, margins wavy. Flowering from August 2.

SHELL PINK (Kunderd).—4 to 4½ feet, well arranged, branched, with 16 closely set flowers, 4 out at a time; flowers 4 inches diameter, rich cerise-pink on creamy-white, centre of lower petals pale cream speckled cerise, upper petal horizontal, margins wavy. Flowering from July 30.

Flowers salmon on cream.

AWARDS.

La Cousance, A.M. (g.) August 12, 1927. Raised by Messrs. Vilmorin Andrieux and sent by Messrs. Bath.

Salmon Beauty, A.M. (g.) August 5, 1927. Raised by Messrs. Kunderd and sent by Messrs. Amos, and Bath.

L'Ecaillon, H.C. (g.) August 5, 1927. Raised by Messrs. Vilmorin Andrieux and sent by Messrs. Bath.

Jewell, H.C. (c.) August 12, 1927. Raised by Messrs. C. Zeestraten and sent by Messrs. W. J. Unwin.

Opal, H.C. (g.) August 12, 1926. Raised and sent by Messrs. Kunderd.

Linton, H.C. (g.) August 12, 1926. Raised by Messrs. Kunderd and sent by Messrs. Bath.

L'Orillon, H.C. (g.) August 5, 1927. Raised by Messrs. Vilmorin Andrieux and sent by Messrs. Bath.

L'HELPE (Bath).—4 feet, of medium strength, branched, with 14 to 16 closely set flowers, 3 out at a time; flowers $4\frac{1}{2}$ inches diameter, buff shaded salmon, upper petal horizontal. Flowering from July 23.

SALMON BUFF (Kunderd).—4 feet, strong, unbranched, with 14 to 16 very closely set flowers, 3 or 4 out at a time; flowers 4 inches diameter, creamy salmon-buff, centre of lower petals lined and speckled red, upper petal horizontal, margins wavy. Flowering from August 8.

EDEN (Bath).—5 feet, strong, branched, with 16 or 17 closely set flowers, 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, pale salmon-pink on creamy-white, centre of lower petals primrose lined red, upper petal horizontal, margins somewhat wavy. Flowering from July 30.

L'ECAILLON (Bath), H.C.—4 feet, branched, with 12 or 13 closely set flowers, 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, pale salmon-pink on cream, lower petals pale pinkish-buff blotched crimson, upper petal horizontal. Flowering from July 30.

LA COUSANCE (Bath), A.M.—4 to $4\frac{1}{2}$ feet, strong, branched, with 14 to 16 very closely set flowers, 3 or 4 out at a time; flowers $3\frac{1}{2}$ to 4 inches diameter, pale salmon-pink on cream, lower petals cream, upper petal horizontal. Flowering from August 2.

GENERAL DE WET (Netherlands Gladiolus Society, Bath, Unwin, Grullemans, C. A. van Zanten).—4 feet, strong, branched, with 14 to 16 closely set flowers, 3 out at a time; flowers $3\frac{1}{2}$ inches diameter, pale salmon-pink on cream, centre of lower petals flushed red, upper petal horizontal. Flowering from August 18.

LA SELLE (Bath).— $3\frac{1}{2}$ feet, unbranched, medium strength, with 12 to 14 closely set flowers, 3 or 4 out at a time; flowers 4 inches diameter, pale salmon-pink on cream, lower petals suffused cream, upper petal horizontal, margins somewhat wavy. Flowering from August 2.

PRINCE OF ORANGE (Grullemans, Bath).— $3\frac{1}{2}$ feet, unbranched, with 14 closely set flowers, 4 or 5 out at a time; flowers $3\frac{1}{2}$ to $3\frac{1}{2}$ inches diameter, pale salmon-pink on cream, hooded. Flowering from August 5. Also sent by Messrs. Grullemans as 'Lord Nelson' in error.

JEWELL (Unwin), H.C.—4 feet, branched, with 14 closely set flowers, 4 or 5 out at a time; flowers $4\frac{1}{2}$ inches diameter, hooded, pale salmon-pink on cream, lower petals cream, margins somewhat wavy. Flowering from August 6.

MYRA (Unwin).— $3\frac{1}{2}$ feet, branched, with 12 or 13 widely set flowers, 3 out at a time; flowers $4\frac{1}{2}$ inches diameter, pale salmon-pink on cream, lower petal apricot lined carmine, upper petal horizontal. Flowering from August 9.

PRINCESS ELIZABETH (Grullemans).— $2\frac{1}{2}$ feet, unbranched, with 9 to 10 medium set flowers, 2 or 3 out at a time; flowers $3\frac{1}{2}$ inches diameter, bright salmon-pink on pale cream, lower petals speckled carmine on cream; upper petal horizontal. Flowering from August 10.

OPAL (Kunderd), H.C.—4 to $4\frac{1}{2}$ feet, branched, strong, with 14 very closely set flowers, 3 or 4 out at a time; flowers $3\frac{1}{2}$ to 4 inches diameter, hooded, salmon-pink, lower petals cream veined carmine, margins much waved. Flowering from July 29.

L'AISNE (Bath).— $3\frac{1}{2}$ feet, of medium strength, branched, with 14 closely set flowers, 3 out at a time; flowers $4\frac{1}{2}$ inches diameter, salmon-pink on cream, centre of lower petals pale lemon, upper petal horizontal. Flowering from August 6.

LINTON (Bath), H.C.—4 feet, strong, branched, with 14 to 16 very closely set flowers, 3 or 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, rosy-salmon on cream, lower petals cream blotched crimson, upper petal horizontal, margins wavy. Flowering from August 2.

LORIOR (Bath).— $4\frac{1}{2}$ to 5 feet, of medium strength, branched, with 16 or 17 closely spaced flowers, 4 out at a time; flowers $3\frac{1}{2}$ to 4 inches diameter, hooded, dull salmon-rose, lower petals apricot, margins somewhat wavy. Flowering from August 6.

ULRICA (Kunderd).—4 feet, branched, with 12 to 14 very closely set flowers, 3 out at a time; flowers $3\frac{1}{2}$ inches diameter, bright salmon, lower petals creamy-

buff lined deep salmon, upper petal horizontal, margins wavy. Flowering from August 3.

UTOPIA (Bath, Lowe & Gibson).— $3\frac{1}{2}$ feet, branched, with 14 closely set flowers, 3 or 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, hooded, rich salmon, lower petals apricot lined crimson at centre, margins somewhat wavy. Flowering from August 8.

L'ORILLON (Bath), H.C.— $3\frac{1}{2}$ feet, unbranched, with 14 closely set flowers, 3 or 4 out at a time; flowers 4 inches diameter, rich salmon-pink on deep cream, centre of lower petals creamy-primrose, hooded. Flowering from July 30.

CASSIOPIA (Kunderd).— $3\frac{1}{2}$ feet, branched, with 14 closely set flowers, 3 out at a time; flowers $3\frac{1}{2}$ inches diameter, hooded, rich salmon-pink on cream, lower petals cream, margins somewhat wavy. Flowering from July 28.

SALMON BEAUTY (Amos, Bath), A.M.— $4\frac{1}{2}$ feet, branched, with 14 closely set flowers, 3 out at a time; flowers $3\frac{1}{2}$ inches diameter, hooded, bright rich salmon-pink on cream, lower petals cream lined red, margins somewhat wavy. Flowering from August 2.

DR. BARNHOORN (Prins).— $4\frac{1}{2}$ feet, branched, with 15 very closely set flowers, 3 or 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, bright salmon, lower petals lemon streaked creamy-white. Flowering from July 25.

Flowers salmon.

AWARD.

Rudolph Hertzog, A.M. (g.) August 5, 1927. Raised by Messrs. Pfitzer and sent by Messrs. Bath.

TEMBLOR (Kunderd).—4 feet, strong, branched, with 14 very closely set flowers, 3 or 4 out at a time; flowers $4\frac{1}{2}$ inches diameter, hooded, salmon, lower petals salmon-pink lined red, margins somewhat wavy. Flowering from July 29.

ARGO (R. Veitch).—4 feet, unbranched, of medium strength, with 14 closely set flowers, 3 or 4 out at a time; flowers 4 inches diameter, salmon-pink, upper petal horizontal. Flowering from July 27.

SALBACH'S PRIM (Salbach, Bath).—4 feet, branched, strong, with 16 to 18 very closely set flowers, 3 or 4 out at a time; flowers $4\frac{1}{2}$ inches diameter, rich deep salmon, centre of lower petals lemon speckled salmon, upper petal horizontal, margins wavy. Flowering from August 22.

RUDOLPH HERTZOG (Bath), A.M.—4 to $4\frac{1}{2}$ feet, branched, with 14 closely set flowers, 3 or 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, hooded, rich dark salmon, lower petal lined red, margins somewhat wavy. Flowering from August 2.

Flowers old rose.

HOBBEMA (Dobbie).—4 feet, branched, with 14 closely set flowers, 3 or 4 out at a time; flowers 4 inches diameter, dull old rose, lower petals lined magenta, upper petal horizontal. Flowering from August 2.

Flowers cerise on cream.

HELGA (Grullemans).— $3\frac{1}{2}$ feet, unbranched, with 18 very closely set flowers, 3 or 4 out at a time; flowers 4 inches diameter, cerise on cream, lower petals lined and suffused carmine, hooded. Flowering from July 28.

Flowers cherry-red.

AWARD.

Midsummer Dream, H.C. (g.) August 5, 1927. Raised by Messrs. Kunderd and sent by Messrs. Bath, Lowe & Gibson, Kunderd.

MIDSUMMER DREAM (Bath, Lowe & Gibson, Kunderd), H.C.— $3\frac{1}{2}$ feet, branched, with 14 to 16 very closely set flowers, 3 or 4 out at a time; flowers $3\frac{1}{2}$ to $3\frac{3}{4}$ inches diameter, rich cherry-red, upper petal horizontal. Flowering from August 3.

Flowers orange-scarlet.

AWARDS.

L'Yser, A.M. (g.) August 5, 1927. Raised by Messrs. Vilmorin Andrieux and sent by Messrs. Bath. (H.C. 1926.)

Golden Gleam, A.M. (g.) August 12, 1926. Raised and sent by Messrs. Kunderd.

EDA (Bath).—4 feet, branched, with 11 to 12 closely set flowers, 3 out at a time; flowers 4 inches diameter, orange-scarlet, reverse stained bluish, upper petal horizontal. Flowering from August 6.

L'YSER (Bath), A.M.—3½ feet, branched, with 12 closely set flowers, 3 out at a time; flowers 4 inches diameter, orange-scarlet, centre of lower petals pale cream, upper petal horizontal, margins somewhat wavy. Flowering from August 2.

GOLDEN GLEAM (Kunderd), A.M.—4 feet, branched, with 12 to 14 very closely set flowers, 3 or 4 out at a time; flowers 3½ inches diameter, rich orange-red, lower petal orange-buff lined red, upper petal horizontal, margins wavy. Flowering from August 3.

Flowers scarlet.

AWARD.

Favourite (Krelage's), A.M. (c., e., g.) August 5, 1927. Raised by Messrs. Krelage and sent by Netherlands Gladiolus Society, Messrs. Bath, and H. Prins. L'Exuette, H.C. (g.) July 30, 1926. Raised by Messrs. Vilmorin Andrieux and sent by Messrs. Bath.

CAPELLA (Bath).—4½ to 4½ feet, branched, with 14 to 16 closely set flowers, 3 or 4 out at a time; flowers 4 inches diameter, rich salmon-scarlet, centre of lower petals salmon-buff lined red, hooded. Flowering from August 2.

L'EXUETTE (Bath), H.C.—4 feet, branched, with 12 to 14 closely set flowers, 3 out at a time; flowers 4½ inches diameter, rich salmon-scarlet, lower petals pale cream at centre, hooded. Flowering from August 2.

LA DYLE (Bath).—4 feet, unbranched, with 16 to 18 very closely set flowers, 4 out at a time; flowers 4½ inches diameter, rich scarlet, centre of lower petals pale cream, upper petal horizontal. Flowering from August 4.

PANSY (Bath).—3½ feet, branched, with 14 to 16 closely set flowers, 3 or 4 out at a time; flowers 3½ inches diameter, dull rosy-scarlet, lower petals crimson, upper petal horizontal, margins wavy. Flowering from August 2.

FAVOURITE, KRELAGE'S (Netherlands Gladiolus Society, Bath, Prins), A.M.—3½ feet, branched, with 14 to 16 very closely set flowers, 4 or 5 out at a time; flowers 3½ to 4½ inches diameter, rich scarlet, hooded, margins somewhat wavy. Flowering from July 20.

Flowers crimson.

AWARD.

Firecrest, H.C. (g.) August 12, 1926. Raised and sent by Major G. Churcher.

FIRECREST (Churcher), H.C.—3½ to 4 feet, branched, with 14 or 15 very closely set flowers, 4 out at a time; flowers 3½ inches diameter, rich crimson-scarlet, flaked darker at margins, upper petal horizontal. Flowering from July 29.

DOROTHY FLEMING (Fleming).—3½ feet, branched, with 14 closely set flowers, 4 out at a time; flowers 3½ inches diameter, rich rosy-crimson, upper petal horizontal, margin somewhat wavy. Flowering from August 3.

Flowers purple.

E. B. WILLIAMSON (Kunderd).—4 feet, unbranched, with 14 to 16 closely set flowers, 3 or 4 out at a time; flowers 3½ to 4 inches diameter, rich purplish-magenta, hooded. Flowering from August 4.

CLASS III.—Large-Flowered Type.

Flowers white.

AWARDS.

L'Immaculée, A.M. (g., e.) August 12, 1927. Sent by Messrs. Unwin, Morris, and Dobbie.

White City, C. (g.) August 29, 1927. Raised by Messrs. Pfitzer and sent by Messrs. Bath.

Albatross, C. (g.) August 29, 1927. Raised by Messrs. Pfitzer and sent by Messrs. Konyenburger & Mark.

L'IMMACULÉE (Unwin, Morris, Dobbie), A.M.—4 feet, unbranched, with 18 to 20 closely set flowers, 6 or 7 out at a time; flowers 4 inches diameter, somewhat hooded, white, substance soft. Flowering from August 6.

WHITE CITY (Bath, C.)—4 to 4½ feet, unbranched, with 18 to 20 closely set flowers, around the spike, 5 out at a time; flowers 3½ inches diameter, oblong, white, somewhat hooded. Flowering from August 12.

MRS. C. P. ALKEMADE (C. A. van Zanten, Bath).—3½ feet, unbranched, with 18 crowded flowers, around the spike, 6 out at a time; flowers 4 inches diameter, white. Flowering from August 8.

ALBATROSS (Konynenburg & Mark), C.—4 to 4½ feet, unbranched, with 18 closely set flowers, 6 out at a time; flowers 5½ inches diameter, white, substance soft. Flowering from August 6.

WHITE GIANT (Morris, Dobbie, Webb).—3½ feet, unbranched, with 14 to 16 closely set flowers, 4 or 5 out at a time; flowers 5 inches diameter, hooded, white, lower petals cream, as flower ages tinged carmine, petals pointed. Flowering from August 8.

SNOW WREATH (Dobbie).—3½ feet, branched, with 12 to 14 closely set flowers, 4 out at a time; flowers 3½ inches diameter, white, lower petal pale cream. Flowering from August 9.

LENE GRATZ (Bath, C. A. van Zanten).—3½ feet, branched, with 16 crowded flowers, around the spike, 6 or 7 out at a time; flowers 3½ inches diameter, white, lower petal cream feathered with carmine, substance soft. Flowering from August 6.

MISS EDITH CAVELL (C. A. van Zanten, Grullemans).—3 feet, unbranched, with 14 closely set flowers, 4 or 5 out at a time; flowers 4½ inches diameter, white, lower petal lined blue. Flowering from August 9.

GLORY OF NOORDWYK (C. A. van Zanten).—4 feet, unbranched, with 16 closely set flowers, 4 or 5 out at a time; flowers 3½ inches diameter, pale creamy-white self, substance soft. Flowering from August 10.

MARY PICKFORD (Grullemans).—3 feet, unbranched, with 14 or 15 closely set flowers, 4 out at a time; flowers 3½ inches diameter, hooded, creamy-white, lower petals pale cream, substance soft. Flowering from August 6.

Flowers white with pink markings.

AWARD.

Imperator, A.M. (c., e., g.) August 29, 1927. Raised by Messrs. Heemskerck and sent by Messrs. Hewitt of Birmingham.

IMPERATOR (Hewitt), A.M.—3½ to 4 feet, unbranched, with 16 to 18 closely set flowers, 5 or 6 out at a time; flowers 4½ inches diameter, hooded, white with occasional magenta flakes, substance soft, margins wavy. Flowering from August 26. Those sent by Messrs. Bath, Unwin, and Grullemans did not flower.

WHITE WONDER (C. A. van Zanten).—3½ feet, unbranched, with 14 closely set flowers, 4 out at a time; flowers 3½ inches diameter, oblong shaped, white sparsely flaked pale carmine, margins wavy. Flowering from September 6.

ALBANIA (C. A. van Zanten).—3 feet, branched, with 16 crowded flowers, 6 out at a time; flowers 4½ inches diameter, white sparsely flaked pale carmine, substance soft. Flowering from August 6.

WHITE LADY (Dobbie).—4 feet, unbranched, with 16 closely set flowers, 5 out at a time; flowers 3 inches diameter, hooded, white, margins flecked carmine, substance soft. Flowering from August 6.

EARLY SNOWFLAKE (C. A. van Zanten).—3½ feet, mostly unbranched, with 18 closely set flowers, 5 or 6 out at a time; flowers 5 inches diameter, tubular, white flecked with pale carmine, substance soft. Flowering from August 2.

DUCHESS OF WELLINGTON (C. A. van Zanten).—3½ feet, branched, with 18 to 20 closely set flowers, 5 or 6 out at a time; flowers 4 inches diameter, white flaked pale carmine, lower petal lined magenta at middle. Flowering from August 17.

MRS. S. W. WILLOCK (Kelway).—4 feet, unbranched, with 14 closely set flowers, 4 or 5 out at a time; flowers 4½ inches diameter, open, pointed, white flaked pale carmine, lower petal pale cream speckled carmine, substance soft. Flowering from August 11.

PEACE (Dobbie).—4 feet, unbranched, with 18 to 20 closely set flowers, 4 or 5 out at a time; flowers 4 inches diameter, oblong, white sparsely flaked magenta. Flowering from August 28.

Flowers white flushed pink.

AWARDS.

Vesta Tilley, A.M. (g.) August 5, 1927. Sent by Messrs. C. A. van Zanten.

Venus, H.C. (c., g.) August 12, 1927. Sent by Messrs. C. A. van Zanten, and Dobbie.

VENUS (C. A. van Zanten, Dobbie), H.C.—3½ feet, unbranched, with 14 crowded flowers, 4 or 5 out at a time; flowers 3½ inches diameter, white faintly flushed pink, lower petal suffused cream. Flowering from August 2.

CHARM (Dobbie).—4 feet, unbranched, with 18 closely set flowers, 4 or 5 out at a time; flowers 4 inches diameter, white faintly flushed pink, lower petals cream. Flowering from August 12. Much like 'Venus.' Stock badly diseased.

DIADEM (C. A. van Zanten).—3½ feet, branched, with 12 closely set flowers, 4 out at a time; flowers 4½ inches diameter, white with a very faint carmine flush. Near 'Venus.' Flowering from July 25.

VESTA TILLEY (C. A. van Zanten), A.M.—4 feet, unbranched, with 13 very closely set flowers, 6 out at a time; flowers 5 inches diameter, white flushed faintly with pale carmine, lower petal blotched carmine. Flowering from July 22. Near 'Diadem.'

YVONNE (Bath, Prins).—4 feet, unbranched, with 14 to 16 crowded flowers, 5 or 6 out at a time; flowers 4½ inches diameter, white with a very faint pinkish flush, lower petal suffused carmine. Flowering from August 6.

LUCETTE (Churcher, Bath).—3½ feet, branched, with 18 closely set flowers, 4 out at a time; flowers 3½ inches diameter, white, reverse very faintly flushed pale rose, lower petal feathered rose, substance soft. Flowering from August 18.

LA BEAUTÉ (Dobbie, C. A. van Zanten).—4 feet, branched, with 18 closely set flowers around the spike, 6 out at a time; flowers 4 inches diameter, tubular, white shaded pale rose, lower petal creamy-white, substance soft. Flowering from August 12.

MRS. DR. NORTON (Grullemans).—3½ feet, unbranched, with 16 very closely set flowers, 4 or 5 out at a time; flowers 4 inches diameter, hooded, soft rose-pink on white, white predominating, lower petal creamy-white. Flowering from August 19.

IDAMAE (Salbach).—4 feet, unbranched, with 18 very closely set flowers, 5 out at a time; flowers 4 inches diameter, creamy-white, lower petal speckled carmine on cream, substance soft. Flowering from August 8.

Flowers white blotched red.

AWARDS.

Madame Mounet Sully, A.M. (c.) August 5, 1927. Raised by Messrs. Lemoine, introduced and sent by Messrs. Mauger of Guernsey, C.I.

Etendard, A.M. (g.) August 12, 1927. Raised by Messrs. Lemoine and sent by Messrs. Dobbie, and Bath.

Sunspot, A.M. (g.) August 5, 1927. Raised and sent by Messrs. Kelway.

Painted Lady, H.C. (g.) August 5, 1927. Raised and sent by Messrs. Kelway.

PAINTED LADY (Kelway), H.C.—4½ feet, branched, with 14 closely set flowers, 4 out at a time; flowers 4 inches diameter, white, centre of petals shaded scarlet, lower petal blotched scarlet. Flowering from August 3.

LA COURONNE (Bath).—3½ feet, branched, with 14 closely set flowers, 4 out at a time; flowers 3½ inches diameter, hooded, pale creamy-white, lower petals suffused crimson. Flowering from August 12.

MADAME MOUNET SULLY (Mauger), A.M.—3½ feet, unbranched, with 12 closely set flowers, 5 out at a time; flowers 3½ inches diameter, hooded, creamy-white, lower petal blotched scarlet. Flowering from August 2.

ETENDARD (Dobbie, Bath), A.M.—3½ to 3½ feet, branched, with 14 closely set flowers, 4 or 5 out at a time; flowers hooded, 4 inches diameter, pale creamy-white shaded pink, lower petals blotched scarlet. Flowering from August 5.

SUNSPOT (Kelway), A.M.—4½ feet, branched, with 16 closely set flowers, 4 or 5 out at a time; flowers 3½ inches diameter, creamy-pink, lower petal cream blotched crimson. Flowering from July 25.

Flowers yellow.

AWARDS.

Cecilia, A.M. (c.) August 12, 1927. Raised and sent by Mr. A. J. Bliss.

Golden Measure, A.M. (g.) August 12, 1927. Raised by Messrs. Kelway and sent by Messrs. Unwin, Grullemans, Kelway, and Bath.

Flora, G. (g.) August 29, 1927. Sent by Messrs. Bath, and Dobbie.

CLAREMONT (Salbach).—3 feet, unbranched, with 16 to 18 closely set flowers, 4 or 5 out at a time; flowers 3½ inches diameter, pale creamy-yellow, lower petal cream. Flowering from August 28.

CECILIA (Bliss), A.M.—5 feet, branched, with 20 to 22 closely set flowers, 6 or 7 out at a time; flowers $4\frac{1}{2}$ inches diameter, creamy-yellow, margins somewhat wavy. Flowering from August 6.

YELLOW HAMMER (Dobbie, Morris).—4 feet, branched, with 16 very closely set flowers, 5 out at a time; flowers $3\frac{1}{2}$ inches diameter, creamy-yellow, lower petals speckled carmine. Flowering from August 9.

GOLDEN MEASURE (Unwin, Grulleman, Kelway, Bath), A.M.—5 feet, branched, with 18 to 20 very closely set flowers, 5 or 6 out at a time; flowers 4 inches diameter, creamy-yellow, darker than 'Yellow Hammer.' Flowering from August 12.

FLORA (Bath, Dobbie), C.—4 feet, unbranched, with 16 closely set flowers, around the spike, 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, pale sulphur, lower petal deep sulphur. Flowering from August 24.

Flowers yellow blotched red.

AWARDS.

Joannita de Castro, A.M. (g.) August 5, 1927. Raised by Messrs. Pfitzer and sent by Messrs. Bath, and Pfitzer.

La Luna, H.C. (g.) August 29, 1927. Raised by Mr. Groff and sent by Messrs. C. A. van Zanten.

LA LUNA (C. A. van Zanten), H.C.— $3\frac{1}{2}$ feet, unbranched, with 16 closely set flowers, 4 or 5 out at a time; flowers $3\frac{1}{2}$ inches diameter, hooded, pale cream, centre of upper petal tinged carmine, lower petals blotched crimson. Flowering from August 15.

SAFRANO (Grulleman).— $3\frac{1}{2}$ to 4 feet, unbranched, with 14 closely set flowers, 5 out at a time; flowers $3\frac{1}{2}$ inches diameter, hooded, pale cream, reverse tinged magenta, lower petals blotched crimson. Flowering from August 9.

SCHWABEN (Dobbie).— $3\frac{1}{2}$ feet, branched, with 18 crowded flowers, 5 or 6 out at a time; flowers 4 inches diameter, creamy-yellow, lower petal blotched magenta. Flowering from August 12.

JOANNITA DE CASTRO (Bath, Pfitzer), A.M.— $4\frac{1}{2}$ feet, branched, with 18 crowded flowers, 5 out at a time; flowers $4\frac{1}{2}$ inches diameter, bright canary-yellow, lower petals blotched crimson, hooded. Flowering from July 18.

Flowers pink on white.

AWARDS.

Princess America, H.C. (g.) August 12, 1927. Raised and sent by Mr. Charles Elliott, Park Ridge, Cook County, Illinois, U.S.A.

Elizabeth Tabor, H.C. (g.) August 5, 1927. Raised by Mr. Hinkle and sent by Messrs. Unwin, and Bath.

PINK WONDER (C. A. van Zanten).— $3\frac{1}{2}$ feet, unbranched, with 14 to 16 closely set flowers, occasionally around the stem, 4 or 5 out at a time; flowers $4\frac{1}{2}$ inches diameter, tubular, bluish-pink on white, lower petal heavily speckled magenta, substance soft. Flowering from August 10.

MARSHAL FOCH (Webb, Dobbie, Bath, Unwin).—3 feet, unbranched, with 12 to 14 closely set flowers, 5 or 6 out at a time; flowers $4\frac{1}{2}$ inches diameter, pale bluish-pink, centre of lower petal lined carmine. Flowering from August 6.

PRINCESS AMERICA (Charles Elliott), H.C.—4 feet, mostly unbranched, with 16 to 18 very closely set flowers, 5 out at a time; flowers $3\frac{1}{2}$ inches diameter, hooded, pale pink, centre of lower petal broadly lined carmine. Flowering from August 8.

AMERICA (C. A. van Zanten, Dobbie).— $3\frac{1}{2}$ feet, unbranched, with 14 to 16 closely set flowers, 5 out at a time; flowers $3\frac{1}{2}$ inches diameter, pale amaranth-pink on white. Flowering from August 20.

JESSIE (Dobbie).—3 feet, unbranched, with 16 crowded flowers, 5 or 6 out at a time; flowers 4 inches diameter, somewhat hooded, bright pink, margins flaked carmine, lower petals blotched white. Flowering from August 5.

LA MATALAS (Morris).—3 feet, unbranched, with 18 crowded flowers, 6 or 7 out at a time; flowers hooded, $3\frac{1}{2}$ inches diameter, pale pink, lower petals speckled magenta, substance soft. Flowering from August 8.

SUMMER BEAUTY (Grulleman).—3 feet, unbranched, with 14 closely set flowers, 4 out at a time; flowers 4 inches diameter, pale pink on white, substance soft. Flowering from August 18.

OPHELIA (Konynenburg & Mark).— $4\frac{1}{2}$ feet, unbranched, with 18 closely set flowers, 6 or 7 out at a time; flowers 5 inches diameter, bright pink on white. Flowering from August 8.

NIMROD (Bath).— $3\frac{1}{2}$ feet, unbranched, with 18 crowded flowers, 4 or 5 out at a time; flowers 5 inches diameter, pale pink on creamy-white, margins somewhat wavy. Flowering from August 26.

AUTUMN QUEEN (Grullemans).— $3\frac{1}{2}$ feet, unbranched, with 16 closely set flowers, 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, pale rose, lower petals blotched scarlet. Flowering from August 24.

ELIZABETH TABOR (Unwin, Bath), H.C.— $4\frac{1}{2}$ feet, mostly unbranched, with 16 closely set flowers, 5 out at a time; flowers $3\frac{1}{2}$ inches diameter, bright pale pink, lower petals suffused crimson streaked pale yellow. Flowering from July 23.

WILLIE WIGMAN (Dobbie).—4 feet, unbranched, with 16 closely set flowers, 5 out at a time; flowers $4\frac{1}{2}$ inches diameter, creamy-white tinged carmine, lower petals blotched chestnut. Flowering from August 10.

Flowers pink on cream.

AWARDS.

Phænomen, A.M. (c., s.) August 5, 1927. Raised by Messrs. Pfitzer and sent by Messrs. Konynenburg & Mark.

A. B. Kunderd, H.C. (c., g.) August 29, 1927. Raised by Messrs. Kunderd and sent by Messrs. Bath.

Dawn, } C. (g.) August 29, 1927. Raised by Mr. Groff and sent by Messrs. Bath,
Bleriot, }
Grullemans, C. A. van Zanten, Dobbie, Unwin.

LOVELINESS (Dobbie, C. A. van Zanten).—4 feet, unbranched, with 16 crowded flowers around the spike, 5 or 6 out at a time; flowers $4\frac{1}{2}$ inches diameter, pale cream flaked carmine, substance soft. Flowering from August 8.

HOLLANDIA (C. A. van Zanten).—3 feet, unbranched, with 16 very closely set flowers, 4 or 5 out at a time; flowers $3\frac{1}{2}$ inches diameter, soft creamy-pink, lower petals lined scarlet, substance soft. Flowering from August 16.

DAWN (Bath, Grullemans, C. A. van Zanten) } C.—4 feet, unbranched, with
BLERIOT (Dobbie, C. A. van Zanten, Unwin) }
18 closely set flowers, 5 or 6 out at a time; flowers $4\frac{1}{2}$ inches diameter, bright creamy-pink, centre of lower petals crimson. Flowering from August 16.

A. B. KUNDERD (Bath), H.C.— $3\frac{1}{2}$ feet, branched, with 14 crowded flowers, 5 out at a time; flowers 4 inches diameter, pale amaranth-pink on cream, lower petals lined magenta, margins wavy. Flowering from August 12.

PHÆNOMEN (Konynenburg & Mark), A.M.— $3\frac{1}{2}$ feet, unbranched, with 16 to 18 closely set flowers, 6 or 7 out at a time; flowers $4\frac{1}{2}$ inches diameter, creamy-pink, lower petals pale cream. Flowering from August 2.

LADY DERBY (Bath).— $3\frac{1}{2}$ feet, unbranched, with 16 closely set flowers, 5 out at a time; flowers 4 inches diameter, hooded, creamy-pink, lower petal blotched deep carmine. Flowering from August 3.

SIDNEY PLUMMER (Unwin, Salbach).— $3\frac{1}{2}$ feet, branched, with 16 to 18 very closely set flowers, 5 or 6 out at a time; flowers 4 inches diameter, pale cream tinged rose, lower petal feathered magenta, oblong shaped. Flowering from August 27.

CECILIA KELWAY (Kelway).— $3\frac{1}{2}$ feet, branched, with 14 very closely set flowers, 4 out at a time; flowers 4 inches diameter, deep pink on cream, lower petal heavily speckled crimson, substance soft. Flowering from July 30.

Flowers rose-pink.

AWARDS.

Pink Perfection, H.C. (g.) August 29, 1927. Raised by Messrs. Hopman and sent by Messrs. Unwin, Dobbie, and Morris.

Panama, H.C. (g.) August 29, 1927. Raised by Mr. Barrington and sent by Messrs. Dobbie, and C. A. van Zanten.

ADELAIDE DE LUXEMBURG (C. A. van Zanten).— $3\frac{1}{2}$ feet, unbranched, with 14 to 16 closely set flowers, 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, pale rose-pink on white, lower petals creamy-white at centre, somewhat hooded. Flowering from August 12.

PINK PERFECTION (Unwin, Dobbie, Morris), H.C.—4 feet, branched, with 18 to 20 very closely set flowers, 5 or 6 out at a time; flowers $4\frac{1}{2}$ inches diameter, bright rose-pink flaked darker, centre of lower petals blotched magenta, open, pointed, around spike. Flowering from August 16.

ARTHUR LOCKWOOD (Salbach).— $3\frac{1}{2}$ feet, unbranched, with 18 very closely set flowers, 5 or 6 out at a time; flowers 4 inches diameter, angular, bright rose-pink, lower petals speckled red, substance soft. Flowering from August 12.

PANAMA (Dobbie, C. A. van Zanten), **H.C.**—3 feet, unbranched, with 14 to 16 closely set flowers, 4 out at a time; flowers 4 inches diameter, bright rose-pink, centre of lower petal rich rose. Flowering from August 19.

EVELYN KIRTLAND (Grullemans).—4 feet, branched, with 18 closely set flowers, 5 or 6 out at a time; flowers 4 inches diameter, bright rose-pink, lower petal blotched scarlet. Flowering from August 16.

Flowers rose.

PATRIE (Bath).—3½ feet, unbranched, with 18 closely set flowers, 6 out at a time; flowers 3½ inches diameter, hooded, deep rose, lower petals blotched pale cream, lightly speckled magenta. Flowering from August 8.

TARO (Unwin).—4 feet, branched, with 16 to 18 very closely set flowers, 6 or 7 out at a time; flowers 3½ inches diameter, bright rich carmine, lower petal narrowly lined crimson. Flowering from August 6.

ROMANCE (Bath).—3½ feet, unbranched, with 18 crowded flowers, 6 out at a time; flowers 3½ inches diameter, hooded, carmine edged bluish-mauve, lower petal blotched scarlet, margins wavy. Flowering from August 4.

Flowers orange-pink.

AWARDS.

Sunset, A.M. (c., g.) August 12, 1927. Sent by Messrs. Dobbie.

Osalin, A.M. (g.) August 5, 1927. Raised and sent by Messrs. Carl Salbach, Oakland, California, U.S.A.

Prince of Wales, A.M. (c., e., g.) August 5, 1927. Raised by Mr. Van Zanten and sent by Messrs. Dobbie, and C. A. van Zanten.

Odin, A.M. (c., e., g.) August 5, 1927. Raised by Messrs. Heemskirk and sent by Messrs. Webb, Bath, and Morris.

Thomas Edison, A.M. (c., e., g.) August 5, 1927. Raised by Mr. Krelage and sent by Messrs. Bath, Dobbie, Prins, and Morris.

SUNSET (Dobbie), **A.M.**—3½ feet, branched, with 16 to 18 closely set flowers, 4 or 5 out at a time; flowers 4 inches diameter, orange-pink flaked darker. Flowering from August 8.

KITTY GRULLEMANS (Grullemans).—3½ feet, branched, with 14 closely set flowers, 4 or 5 out at a time; flowers 3½ inches diameter, orange-pink, lower petals scarlet, hooded. Flowering from August 9.

OSALIN (Salbach), **A.M.**—4 feet, branched, with 16 very closely set flowers, 4 out at a time; flowers 4½ inches diameter, bright orange-pink, lower petals lined and speckled scarlet, hooded, margins somewhat wavy. Flowering from July 27.

PRINCE OF WALES (Dobbie, C. A. van Zanten), **A.M.**—4½ feet, mostly unbranched, with 16 to 18 very closely set flowers, 5 or 6 out at a time; flowers 4½ inches diameter, bright orange-pink, lower petals blotched creamy-white. Flowering from July 26.

CARDINAL MANNING (C. A. van Zanten).—4 feet, branched, with 14 somewhat closely set flowers, 4 or 5 out at a time; flowers 3½ inches diameter, orange-pink, lower petals blotched cream lined magenta, hooded. Flowering from July 30.

RICHARD DIENER (Unwin).—3½ feet, unbranched, with 16 closely set flowers, around the spike, 5 out at a time; flowers 4 inches diameter, bright orange-pink, lower petals blotched cream, substance soft. Flowering from August 16.

ODIN (Webb, Bath, Morris), **A.M.**—3½ feet, mostly unbranched, with 14 to 16 crowded flowers, 5 out at a time; flowers 4½ inches diameter, bright orange-pink, lower petal suffused crimson at centre. Flowering from July 30.

THOMAS EDISON (Bath, Dobbie, Prins, Morris), **A.M.**—3½ feet, unbranched, with 14 to 16 crowded flowers, 5 or 6 out at a time; flowers 4 inches diameter, bright orange-pink, lower petal striped and speckled scarlet. Flowering from July 30.

Flowers salmon-orange.

AWARD.

Nancy Hanks, A.M. (e., g.) August 5, 1927. Raised and sent by Mr. Carl Salbach.

COUNTESS OF LEICESTER (Kelway).—4 feet, unbranched, with 12 to 14 closely set flowers, 5 out at a time; flowers 5½ inches diameter, star shaped, bright orange-salmon, lower petal pale cream speckled salmon, substance soft. Flowering from August 2.

JACK LONDON (Bath, Unwin).— $3\frac{1}{2}$ feet, branched, with 18 very closely set flowers, 6 out at a time; flowers $3\frac{1}{2}$ inches diameter, somewhat hooded, bright salmon-orange, lower petals carmine on cream, substance soft. Flowering from August 6.

NANCY HANKS (Salbach), A.M.— $3\frac{1}{2}$ feet, branched, with 18 crowded flowers, 6 out at a time; flowers $4\frac{1}{2}$ inches diameter, rich salmon-orange, lower petal suffused crimson. Flowering from July 30.

Flowers apricot and salmon.

SUNSETINT (Charles Elliott).— $3\frac{1}{2}$ feet, unbranched, with 14 to 16 closely set flowers, 4 or 5 out at a time; flowers 4 inches diameter, apricot suffused and flaked salmon, lower petals blotched crimson. Flowering from September 2.

Flowers old rose and ash.

AWARD.

Rose Ash, H.C. (g.) August 12, 1927. Raised by Messrs. Diener and sent by Messrs. Unwin, Bath, and Hewitt.

ROSE ASH (Unwin, Bath, Hewitt), H.C.— $4\frac{1}{2}$ feet, branched, with 16 to 18 closely set flowers, around the spike; flowers $4\frac{1}{2}$ inches diameter, dull old rose edged and flaked ash, lower petals blotched lemon, speckled rose, margins somewhat wavy. Flowering from August 11.

Flowers salmon-pink.

AWARDS.

Halley, A.M. (c., g.) August 5, 1927. Sent by Messrs. Dobbie.

Johanna, H.C. (g.) August 29, 1927. Sent by Messrs. C. A. van Zanten.

Mrs. H. E. Bothin, H.C. (g.) August 29, 1927. Raised by Messrs. Diener and sent by Messrs. Bath, and Unwin.

Carriok, C. (g.) August 12, 1917. Sent by Messrs. Dobbie.

HALLEY (Dobbie), A.M.— $4\frac{1}{2}$ feet, branched, with 16 to 18 very closely set flowers, 6 out at a time; flowers $4\frac{1}{2}$ inches diameter, bright salmon-pink, lower petals striped and speckled carmine. Flowering from July 25.

RADIANCE (Bath).— $3\frac{1}{2}$ feet, branched, with 18 very closely set flowers, 4 out at a time; flowers 4 inches diameter, bright salmon-pink on white, lower petals speckled deep rose. Flowering from August 22.

LADY BYNG (Hammett).—5 feet, branched, with 14 to 16 closely set flowers, 3 or 4 out at a time; flowers 4 inches diameter, hooded, pale salmon-pink, margins somewhat wavy. Flowering from July 29.

ROSE PRECOSE (Hewitt, C. A. van Zanten, Unwin).—4 feet, unbranched, with 16 crowded flowers, 6 out at a time; flowers $4\frac{1}{2}$ inches diameter, pale salmon-pink flaked darker, lower petal narrowly lined carmine, margins wavy. Flowering from August 8.

DR. HANS PFITZER (Konynenburg & Mark, Pfitzer).—4 feet, unbranched, with 16 very closely set flowers, 3 or 4 out at a time; flowers 4 inches diameter, pale salmon-pink on cream, lower petals pale cream, margins wavy. Flowering from August 27.

ETOILE DU SOIR (Bath).—4 feet, unbranched, with 18 to 20 very closely set flowers, 5 or 6 out at a time, around the spike; flowers 4 inches diameter, pale salmon-pink, centre of lower petal pale cream. Flowering from August 18.

JOHANNA (C. A. van Zanten), H.C.— $4\frac{1}{2}$ feet, branched, with 18 to 20 very closely set flowers, 5 out at a time; flowers $4\frac{1}{2}$ inches diameter, soft salmon-pink on cream, lower petals blotched pale cream. Flowering from August 25.

REMBRANDT (C. A. van Zanten).—4 feet, branched, with 18 closely set flowers, 4 or 5 out at a time; flowers $3\frac{1}{2}$ inches diameter, salmon-pink flaked darker, lower petals pale cream speckled salmon, substance soft. Flowering from July 26.

PRIDE OF LANCASTER (Bath).—3 feet, unbranched, with 16 closely set flowers, 4 or 5 out at a time, around the spike; flowers $3\frac{1}{2}$ inches diameter, rich salmon-pink, lower petals blotched crimson. Flowering from August 31.

Mrs. H. E. BOTHIN (Bath, Unwin), H.C.—3 feet, unbranched, with 14 to 16 closely set flowers, 4 or 5 out at a time; flowers 4 inches diameter, soft salmon-pink on cream, lower petals blotched scarlet, margins somewhat wavy. Flowering from August 27.

CARRICK (Dobbie), C.—4 feet, unbranched, with 18 to 20 closely set flowers, 4 out at a time, around the spike; flowers $3\frac{1}{2}$ inches diameter, salmon-pink, margins shaded mauve, lower petals blotched white at centre, somewhat hooded. Flowering from August 16.

Flowers salmon.

AWARDS.

Hohenzollern, A.M. (g.) August 5, 1927. Raised by Mr. Pfitzer and sent by Messrs. Dobbie.

Sir T. S. Hope-Simpson, C. (g.) August 29, 1927. Raised and sent by Messrs. Kelway.

Orangetinte, C. (c., g.) Raised and sent by Mr. Charles Elliott.

HERBSTRAUBER (Konynenburg & Mark).— $3\frac{1}{2}$ feet, unbranched, with 18 very closely set flowers, 5 or 6 out at a time; flowers $4\frac{1}{2}$ inches diameter, bright salmon, lower petals feathered scarlet, margins somewhat wavy. Flowering from August 31.

SUPERB (Kelway).— $3\frac{1}{2}$ feet, unbranched, with 14 to 16 crowded flowers, 4 out at a time; flowers $4\frac{1}{2}$ inches diameter, bright salmon, lower petals lined and speckled scarlet. Flowering from August 5.

BEAUTY OF BADSEY (Yates).—3 feet, unbranched, with 14 closely set flowers, 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, salmon flaked darker, lower petal lined red at centre. Flowering from August 9.

EUGENE SANDOW (Kelway).— $3\frac{1}{2}$ feet, unbranched, with 18 to 20 crowded flowers, 5 out at a time; flowers $4\frac{1}{2}$ inches diameter, deep rosy-salmon, lower petal blotched pale cream. Flowering from August 15.

RUBINI (C. A. van Zanten).—3 feet, unbranched, with 12 closely set flowers, 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, salmon, lower petal blotched creamy-white, substance soft. Flowering from August 6.

GRAHAME WHITE (Kelway).— $3\frac{1}{2}$ feet, unbranched, with 16 closely set flowers, 5 out at a time; flowers $3\frac{1}{2}$ inches diameter, rich salmon, lower petal blotched cream, speckled red, tubular shaped. Flowering from August 8.

CARNEGIE (C. A. van Zanten).— $3\frac{1}{2}$ feet, branched, with 14 closely set flowers, 3 or 4 out at a time; flowers $4\frac{1}{2}$ inches diameter, salmon, lower petals suffused and striped crimson, substance soft. Flowering from July 30.

SIR T. S. HOPE-SIMPSON (Kelway), C.— $4\frac{1}{2}$ feet, branched, with 18 closely set flowers, 5 out at a time; flowers $4\frac{1}{2}$ inches diameter, deep salmon, lower petals blotched crimson. Flowering from August 9.

ORANGETINTE (Charles Elliott), C.— $3\frac{1}{2}$ feet, unbranched, with 18 to 20 crowded flowers, 5 out at a time; flowers $4\frac{1}{2}$ inches diameter, deep salmon, centre of lower petals crimson. Flowering from August 14.

HOHENZOLLERN (Dobbie), A.M.— $3\frac{1}{2}$ feet, unbranched, with 14 to 16 very closely set flowers, 5 out at a time; flowers $4\frac{1}{2}$ inches diameter, bright salmon, lower petals blotched crimson. Flowering from July 30.

Flowers salmon-cerise.

AWARDS.

Trudel Grotz, A.M. (c.) August 5, 1927. Raised by Messrs. Pfitzer and sent by Messrs. Bath.

ELSINORE (Bliss).— $4\frac{1}{2}$ feet, branched, with 16 to 18 closely set flowers, 4 or 5 out at a time; flowers 4 inches diameter, bright salmon-cerise, lower petals lined magenta, somewhat hooded. Flowering from August 10.

JAMES DUNLOP (Dobbie).— $4\frac{1}{2}$ feet, branched, with 18 crowded flowers, 5 or 6 out at a time; flowers 4 inches diameter, rich salmon-cerise, lower petals blotched white, hooded, substance soft. Flowering from August 4.

TRUDEL GROTZ (Bath), A.M.— $3\frac{1}{2}$ feet, unbranched, with 14 to 16 closely set flowers, 3 or 4 out at a time; flowers $4\frac{1}{2}$ inches diameter, bright salmon-cerise, lower petals blotched scarlet, margins somewhat wavy, substance soft. Flowering from August 2.

Flowers cerise.

AWARDS.

Sparkler, A.M. (g.) August 5, 1927. Sent by Messrs. Dobbie.

Early Sunrise, A.M. (c., s., g.) August 27, 1927. Raised by Messrs. Velthuys, sent by Messrs. Dobbie, Unwin and C. A. van Zanten.

MEILUST (Dobbie, C. A. van Zanten, Bath).— $3\frac{1}{2}$ to $3\frac{3}{4}$ feet, unbranched, with 18 crowded flowers, 5 out at a time; flowers $4\frac{1}{2}$ inches diameter, hooded, bright rich pinkish-cerise, centre of lower petals suffused crimson, substance soft. Flowering from July 30.

ROSA WEIDLIN (Bath).—3½ feet, branched, with 16 crowded flowers, 4 or 5 out at a time; flowers 4 inches diameter, hooded, rosy-cerise on white, centre of lower petal white, substance soft. Flowering from July 30.

J. B. CLARK (Kelway).—3½ feet, branched, with 16 closely set flowers, 4 or 5 out at a time; flowers 4½ inches diameter, hooded, rich rosy-cerise on cream margins somewhat wavy. Flowering from July 30.

CRAGANOUR (Kelway).—4 feet, branched, with 16 to 18 very closely set flowers, 4 or 5 out at a time; flowers 4½ inches diameter, tubular shaped, bright rosy-cerise, lower petals magenta striped white, substance soft. Flowering from August 15.

COPEX (C. A. van Zanten).—3½ feet, unbranched, with 16 very closely set flowers, 5 out at a time; flowers 4 inches diameter, hooded, dull rosy-cerise, lower petals suffused crimson, substance flimsy. Flowering from July 28.

ROSETINTE (Charles Elliott).—3½ feet, unbranched, with 16 crowded flowers, around the spike, 5 out at a time; flowers 4½ inches diameter, rich deep dull rosy-cerise, lower petal suffused crimson, margins somewhat wavy. Flowering from August 8.

MOLLIE DOUGLAS (Bilby).—4 feet, branched, with 18 to 20 very closely set flowers, 5 out at a time; flowers 4½ inches diameter, cherry-red, lower petals suffused crimson, somewhat hooded. Flowering from September 10.

PROSPERINE (Morris).—3 feet, unbranched, with 16 crowded flowers, 4 or 5 out at a time; flowers 4 inches diameter, rich cherry-red, somewhat hooded, centre of lower petals lined crimson. Flowering from July 30.

PRIDE OF HAARLEM (Unwin, Grullemans).—3 feet, unbranched, with 16 very closely set flowers, 4 or 5 out at a time, around the spike; flowers 4½ inches diameter, bright cerise. Flowering from August 8.

EARLY SUNRISE (C. A. van Zanten, Unwin, Dobbie), A.M.—4 feet, unbranched, with 16 closely set flowers, 6 or 7 out at a time; flowers 5 inches diameter, bright cerise. Flowering from August 18.

JASPER (Churcher).—4 feet, unbranched, with 16 closely set flowers, 6 out at a time; flowers 4½ inches diameter, bright cerise, lower petal suffused and speckled crimson. Flowering from August 3.

E. J. SHAYLOR (Unwin, Grullemans, Hewitt).—3½ to 3½ feet, unbranched, with 18 closely set flowers, 4 or 5 out at a time; flowers bright rich cerise, somewhat hooded, lower petal suffused crimson, margins somewhat wavy. Flowering from August 2.

SPARKLER (Dobbie), A.M.—4 feet, branched, with 16 to 18 closely set flowers, 4 out at a time; flowers 4 inches diameter, hooded, deep cerise, centre of lower petals cream, substance soft. Flowering from July 30.

Flowers rosy-scarlet.

AWARDS.

Mrs. Leon Douglas, H.C. (c.) August 29, 1927. Raised by Messrs. Diener and sent by Messrs. Unwin.

Dr. van Fleet, H.C. (c.) August 5, 1927. Raised by Messrs. Kunderd and sent by Messrs. Unwin, Bath.

GENERAL PETAIN (C. A. van Zanten, Morris).—4 feet, unbranched, with 16 closely set flowers, around the spike, 4 out at a time; flowers 4 inches diameter, pale rosy-scarlet, lower petals speckled scarlet on creamy-white. Flowering from August 9.

Mrs. LEON DOUGLAS (Unwin), H.C.—5½ to 6 feet, branched, with 18 closely set flowers, around the spike, 5 or 6 out at a time; flowers 5 inches diameter, bright pale rosy-scarlet flaked darker, lower petals speckled scarlet on pale cream, angular margins wavy. Flowering from August 16.

ELECTRA (Dobbie).—4 feet, mostly unbranched, with 16 very closely set flowers, 4 out at a time; flowers 4½ inches diameter, rosy-scarlet, lower petals creamy-white suffused deep scarlet. Flowering from August 4.

APOLLO (Bath).—3½ feet, unbranched, with 18 to 20 crowded flowers, 5 or 6 out at a time; flowers 4½ inches diameter, rosy-scarlet, lower petals creamy-white speckled scarlet, substance somewhat soft. Flowering from August 15.

LORD ALVERSTONE (Kelway).—3½ feet, branched, with 16 to 18 closely set flowers, around the spike, 4 out at a time; flowers 4 inches diameter, somewhat hooded, bright rosy-red. Flowering from August 9.

ORBY (Kelway).—4½ feet, unbranched, with 18 to 20 closely set flowers, 5 or 6 out at a time; flowers 4½ inches diameter, hooded, rosy-scarlet flaked darker. Flowering from August 18.

W. L. REEVES (Kelway).— $3\frac{1}{2}$ feet, branched, with 16 to 18 crowded flowers around the spike, 5 or 6 out at a time; flowers $4\frac{1}{2}$ inches diameter, rosy-scarlet, lower petals white speckled carmine. Flowering from July 29.

LUCIFER (C. A. van Zanten, Dobbie).—3 feet, unbranched, with 12 to 14 closely set flowers, 3 or 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, rosy-scarlet, somewhat hooded, lower petals suffused crimson. Flowering from August 8.

DR. VAN FLEET (Unwin, Bath), H.C.— $4\frac{1}{2}$ feet, unbranched, with 16 closely set flowers, 4 or 5 out at a time; flowers $4\frac{1}{2}$ inches diameter, bright rosy-scarlet on cream, somewhat hooded, lower petals suffused cream, substance soft, margins wavy. Flowering from August 2.

LORD COURTNEY (Kelway).— $4\frac{1}{2}$ feet, branched, with 16 to 18 closely set flowers, around the spike, 4 or 5 out at a time; flowers $4\frac{1}{2}$ inches diameter, tubular, bright rosy-scarlet, lower petals blotched white and speckled scarlet, substance soft. Flowering from August 8.

Flowers orange-scarlet.

AWARDS.

Brilliant, A.M. (c., e., g.) August 5, 1927. Raised by Messrs. Deursen and sent by Messrs. Dobbie, C. A. van Zanten, and Bath.

Restauration, H.C. (g.) August 12, 1927. Sent by Messrs. C. A. van Zanten.

PRESIDENT HARDING (Prins).—4 to $4\frac{1}{2}$ feet, branched, with 20 to 22 very closely set flowers, 6 or 7 out at a time; flowers $5\frac{1}{2}$ inches diameter, very bright pale orange-scarlet, margins flaked scarlet, lower petals blotched white and speckled scarlet. Flowering from August 9.

GOLDEN WEST (Dobbie, C. A. van Zanten).— $3\frac{1}{2}$ feet, unbranched, with 14 to 16 closely set flowers, 3 or 4 out at a time; flowers 4 inches diameter, hooded, orange-scarlet, lower petals spotted scarlet on cream. Flowering from August 12.

BRILLIANT (Dobbie, C. A. van Zanten, Bath), A.M.—4 feet, branched, with 18 to 20 closely set flowers, 6 out at a time; flowers $3\frac{1}{2}$ inches diameter, hooded, bright orange-scarlet, lower petals suffused crimson. Flowering from August 3.

RESTAURATION (C. A. van Zanten), H.C.— $3\frac{1}{2}$ feet, branched, with 16 to 18 closely set flowers, around the stem, 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, hooded, bright orange-scarlet self. Flowering from August 9.

Flowers scarlet.

AWARDS.

Triumph, A.M. (c., e., g.) August 29, 1927. Raised by Mr. Pfitzer and sent by Messrs. Konynenburg & Mark.

Flaming Sword, A.M. (c., e., g.) August 5, 1927. Raised by Messrs. Pfitzer and sent by Messrs. Bath, C. A. van Zanten, Dobbie, van Tubergen, and R. Veitch.

Pride of Hillegom, A.M. (e.) August 5, 1927. Raised by Mr. Velthuys, sent by Messrs. C. A. van Zanten, and Dobbie.

Energie, A.M. (e., g.) August 5, 1927. Sent by Messrs. Dobbie, Unwin, Bath, C. A. van Zanten, and Morris.

Red Empress, A.M. (c., e., g.) August 5, 1927. Raised and sent by Messrs. Nieuwenhuis of Lisse, Holland.

Fair King, A.M. (c., e., g.) August 12, 1927. Raised by Mr. Vos, sent by Messrs. Bath, and C. A. van Zanten.

Crimson Glow, A.M. (c., e., g.) August 12, 1927. Raised by Mr. Betscher and sent by Messrs. Unwin, Bath, and Grullemans.

Speculant, A.M. (g.) August 12, 1927. Sent by Messrs. C. A. van Zanten.

Mrs. Dr. Hauff, H.C. (g.) August 29, 1927. Raised by Messrs. Pfitzer and sent by Messrs. Unwin, Bath, Grullemans, and Prins.

Splendour, H.C. (g.) August 5, 1927. Raised and sent by Mr. A. J. Bliss.

Aurora, H.C. (g.) August 5, 1927. Raised by Mr. Vethuys, sent by Messrs. C. A. van Zanten.

War, C. (g.) August 29, 1927. Raised by Mr. Groff, sent by Messrs. Dobbie.

MAJESTIC (Grullemans, C. A. van Zanten).— $3\frac{1}{2}$ feet, unbranched, with 14 crowded flowers, around the spike, 5 out at a time; flowers 4 inches diameter, pale scarlet, centre of petals lined white, margins somewhat wavy. Flowering from August 2.

CHATEAU THIERRY (Grullemans).—3 feet, unbranched, with 12 closely set flowers, 3 out at a time; flowers $4\frac{1}{2}$ inches diameter, hooded, pale scarlet, lower petals cream blotched deep scarlet. Flowering from August 18.

KING OF GLADIOLI (Kelway).—3½ feet, branched, with 18 closely set flowers, 5 out at a time; flowers 4½ inches diameter, hooded, bright pale scarlet, lower petals cream blotched crimson, substance soft. Flowering from August 12.

TRIUMPH (Konynenburg & Mark), A.M.—4 feet, unbranched, with 18 closely set flowers, 5 or 6 out at a time; flowers 4½ inches diameter, bright pale scarlet, lower petals flushed crimson. Flowering from August 16.

FLAMING SWORD (Bath, C. A. van Zanten, Dobbie, van Tubergen, R. Veitch), A.M.—4 feet, branched, with 18 closely set flowers, 5 or 6 out at a time; flowers 3½ inches diameter, hooded, bright vermilion, centre of lower petals lined crimson. Flowering from July 30.

SCARLANO (Bath, Hewitt, Grullemans).—3 feet, with 14 to 16 very closely set flowers, 4 or 5 out at a time; flowers 3½ inches diameter, scarlet, centre of lower petals lined maroon, margins wavy. Flowering from August 15.

LIEBESFEUER (Dobbie, C. A. van Zanten).—3½ feet, branched, with 18 closely set flowers, 5 or 6 out at a time; flowers 4 inches diameter, bright scarlet, centre of lower petals lined magenta, margins somewhat wavy. Flowering from August 27.

J. L. CLUCAS (Kelway).—4 feet, unbranched, with 18 to 20 very closely set flowers, 5 or 6 out at a time; flowers 4 inches diameter, bright scarlet, lower petals speckled carmine. Flowering from August 15.

MRS. DR. HAUFF (Unwin, Bath, Grullemans, Prins), H.C.—4 feet, branched, with 18 to 20 closely set flowers, around the spike, 5 or 6 out at a time; flowers 4½ inches diameter, bright scarlet, lower petals lined crimson. Flowering from August 9.

PRIDE OF HILLEGOM (C. A. van Zanten, Dobbie), A.M.—3½ to 4 feet, branched, with 16 to 18 closely set flowers, 6 out at a time; flowers 4 inches diameter, bright scarlet, lower petals lined white, margins somewhat wavy. Flowering from August 2.

BRILLIANT SURPRISE (C. A. van Zanten, Dobbie).—3½ feet, branched, with 16 to 18 closely set flowers, 4 or 5 out at a time; flowers 4 inches diameter, bright scarlet, lower petals lined at centre creamy-white. Flowering from August 15.

ENERGIE (Dobbie, Unwin, Bath, C. A. van Zanten, Morris), A.M.—3 to 3½ feet, unbranched, with 16 to 18 crowded flowers, 5 or 6 out at a time; flowers 3½ inches diameter, hooded, bright scarlet, margins flaked maroon, wavy. Flowering from August 4. Also sent by Messrs. Bath as 'Chris' in error.

RED STAR (Dobbie).—3½ feet, unbranched, with 14 closely set flowers, around the spike, 4 out at a time; flowers 4 inches diameter, deep rich scarlet. Flowering from August 15.

RED EMPEROR (C. A. van Zanten, Morris, Dobbie, Webb).—4 feet, unbranched, with 16 to 18 closely set flowers, 4 out at a time; flowers 4½ inches diameter, tubular, bright scarlet flaked crimson. Flowering from August 9.

CLEAR EYE (Bath, Dobbie, Grullemans).—3½ feet, branched, with 16 closely set flowers, 4 out at a time; flowers 4 inches diameter, bright scarlet, lower petals blotched white, substance soft. Flowering from August 4. Also sent by Messrs. Dobbie as 'Princépine' and by Messrs. Webb as 'Golden West' in error.

RED EMPRESS (Nieuwenhuis), A.M.—3½ feet, branched, with 18 crowded flowers, 6 or 7 out at a time; flowers 4 inches diameter, dull scarlet, lower petals blotched pale carmine, substance soft. Flowering from July 30.

ROODKAPJE (Konynenburg & Mark).—4 feet, branched, with 18 closely set flowers, 7 or 8 out at a time; flowers 4 inches diameter, bright scarlet, hooded, lower petals blotched dull carmine. Flowering from August 5.

BRENCHLEYENSIS (C. A. van Zanten).—3 feet, unbranched, with 14 very closely set flowers, 4 out at a time; flowers 3 inches diameter, bright scarlet, lower petals suffused cream lined brown. Flowering from August 12.

N. ROLAND BURKE (Kelway).—5 feet, branched, with 18 closely set flowers, 5 out at a time; flowers 4½ inches diameter, bright scarlet, lower petals shaded cream speckled scarlet, margins wavy. Flowering from August 5.

MRS. VELTHUYS (Bath).—3 to 3½ feet, unbranched, with 16 to 18 closely set flowers, 4 or 7 out at a time; flowers 4½ inches diameter, hooded, rich scarlet, margins darker. Flowering from August 2.

SPLENDOUR (Bliss), H.C.—4½ feet, unbranched, with 14 to 16 very closely set flowers, 4 or 5 out at a time; flowers 4 inches diameter, flat, rich scarlet self, substance soft. Flowering from July 28.

HILDA (C. A. van Zanten, Dobbie).—4 feet, branched, with 18 closely set flowers, 4 or 5 out at a time; flowers 3½ inches diameter, somewhat hooded, rich scarlet self. Flowering from August 16.

VESUVIUS (Dobbie, C. A. van Zanten).—4 feet, branched, with 14 to 16 closely set flowers, 4 out at a time; flowers 3½ inches diameter, somewhat hooded, bright rich scarlet. Flowering from August 4.

FIRE KING (Bath).—3 feet, unbranched, with 14 to 16 closely set flowers, 4 or 5 out at a time; flowers $3\frac{1}{2}$ inches diameter, somewhat hooded, rich scarlet, lower petals blotched deep crimson. Flowering from August 11.

FAIR KING (Bath, C. A. van Zanten), A.M.— $3\frac{1}{2}$ feet, branched, with 16 to 18 closely set flowers, 4 or 5 out at a time; flowers $4\frac{1}{2}$ inches diameter, bright rich scarlet self. Flowering from August 8. Also sent by Messrs. Dobbie as 'Fire King' in error.

JAMES WILLIAM KELWAY (Kelway).— $3\frac{1}{2}$ feet, branched, with 16 to 18 closely set flowers, around the spike, 4 or 5 out at a time; flowers $4\frac{1}{2}$ inches diameter, hooded, bright rich scarlet, lower petals shaded crimson, lined white. Burns and spots. Flowering from July 22.

CRIMSON GLOW (Unwin, Bath, Grullemans), A.M.—4 feet, branched, with 14 to 16 closely set flowers, 4 out at a time; flowers 4 inches diameter, deep rich scarlet, lower petals crimson on creamy-white. Flowering from August 10.

AURORA (C. A. van Zanten), H.C.— $3\frac{1}{2}$ to $3\frac{3}{4}$ feet, branched, with 18 closely set flowers, 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, deep rich scarlet, lower petals suffused crimson, hooded. Flowering from July 28.

CAPTAIN FRYATT (Morris).— $3\frac{1}{2}$ feet, unbranched, with 16 very closely set flowers, 4 out at a time; flowers 4 inches diameter, bright scarlet, lower petals suffused crimson lined white at centre. Flowering from August 9.

SPECULANT (C. A. van Zanten), A.M.—4 feet, unbranched, with 16 to 18 closely set flowers, 4 or 5 out at a time; flowers $3\frac{1}{2}$ inches diameter, hooded, rich scarlet, lower petals crimson. Flowering from August 9.

MASTERPIECE (Kelway).— $3\frac{1}{2}$ to 4 feet, branched, with 18 to 20 very closely set flowers, 4 or 5 out at a time; flowers $4\frac{1}{2}$ inches diameter, hooded, deep scarlet flaked crimson, lower petals crimson. Flowering from August 9.

WAR (Dobbie), C.—4 to $4\frac{1}{2}$ feet, branched, with 16 to 18 closely set flowers, around the spike, 5 out at a time; flowers 4 inches diameter, rich scarlet-crimson. Flowering from August 22.

Flowers crimson.

AWARDS.

Camillo Schneider, A.M. (g.) August 12, 1926. Raised and sent by Messrs. Pfitzer and sent by Messrs. Konynenburg & Mark.

Cracker Jack, H.C. (g.) August 12, 1927. Raised by Messrs. Lemoine and sent by Messrs. Bath. Also grown as 'Gipsy Queen' and sent by Messrs. Dobbie as 'Gipsy Girl,' which shares the award.

PRESIDENT CARNOT (C. A. van Zanten, Dobbie).— $3\frac{1}{2}$ feet, mostly unbranched, with 18 closely set flowers, around the spike, 4 or 5 out at a time; flowers 4 inches diameter, crimson-scarlet, somewhat hooded. Flowering from August 9.

CRACKER JACK (Bath), H.C.— $4\frac{1}{2}$ feet, branched, with 16 to 18 closely set flowers, 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, crimson, lower petals creamy-white speckled crimson, somewhat hooded. Flowering from August 8. Also grown as 'Gipsy Queen' and sent by Messrs. Dobbie as 'Gipsy Girl.'

RED AMARILLIS (Grullemans).— $3\frac{1}{2}$ feet, unbranched, with 12 to 14 closely set flowers, 4 out at a time; flowers $4\frac{1}{2}$ inches diameter, tubular, deep crimson-scarlet. Flowering from August 22.

FEU SUPERBE (C. A. van Zanten).— $3\frac{1}{2}$ feet, branched, with 16 closely set flowers, 4 or 5 out at a time; flowers 4 inches diameter, hooded, crimson, reverse streaked white, substance soft. Flowering from July 27.

A. E. R. GILLIGAN (Kelway).— $4\frac{1}{2}$ feet, branched, with 18 to 20 closely set flowers, 5 out at a time; flowers $4\frac{1}{2}$ inches diameter, dull crimson, lower petals cream speckled crimson. Flowering from August 6.

MARGARET MOOR (Bliss).—5 feet, branched, with 16 to 18 closely set flowers, 3 or 4 out at a time; flowers $3\frac{1}{2}$ to 4 inches, hooded, rich crimson self. Flowering from August 16. Spots and burns.

BLACK PANSY (Bath).— $4\frac{1}{2}$ feet, branched, with 16 to 18 closely set flowers, around the spike, 4 out at a time; flowers $4\frac{1}{2}$ inches diameter, deep crimson, lower petals crimson-maroon lined creamy-white. Flowering from August 9.

CAMILLO SCHNEIDER (Pfitzer, Konynenburg & Mark), A.M.—4 feet, unbranched, with 16 very closely set flowers, 3 or 4 out at a time; flowers 4 inches diameter, hooded, rich ruby-crimson. Flowering from August 4.

ANTHONY LONGSIDE (Kelway).— $4\frac{1}{2}$ feet, branched, with 18 to 20 closely set flowers, 5 out at a time; flowers $4\frac{1}{2}$ inches diameter, hooded, purplish-crimson, lower petals pale cream lined and speckled crimson, substance soft. Flowering from August 16.

Flowers maroon.

AWARDS.

Heinrich Kansleiter, A.M. (g.) August 5, 1927. Raised by Messrs. Pfitzer and sent by Messrs. Bath, and C. A. van Zanten.

Royal Robe, A.M. (g.) August 5, 1927. Raised and sent by Messrs. Kelway.

Czar Peter, H.C. (c., g.) August 29, 1927. Raised by Mr. Velthuys, sent by Messrs. Bath, and Dobbie.

CZAR PETER (Dobbie, Bath, C. A. van Zanten), **H.C.**—4 feet, branched, with 16 closely set flowers, 4 or 5 out at a time; flowers 4 inches diameter, hooded, rich ruby-red, flaked darker, lower petals lined pale cream at centre. Flowering from August 22.

HEINRICH KANSLEITER (Bath, C. A. van Zanten), **A.M.**—3½ to 4 feet, branched, with 14 to 16 closely set flowers, around the spike, 5 or 6 out at a time; flowers 4 inches diameter, crimson-maroon, hooded, substance soft. Flowering from July 25.

EMPRESS OF INDIA (Dobbie).—3 feet, unbranched, with 16 to 18 crowded flowers, 5 out at a time; flowers 3½ inches diameter, hooded, reddish-maroon, margins flaked dark maroon, central white line on lower petals, substance soft. Flowering from August 6.

BLACK PRINCE (Bath).—3½ feet, branched, with 16 crowded flowers, 4 or 5 out at a time; flowers 4 inches diameter, hooded, deep crimson-maroon, central cream line on lower petals, substance soft. Flowering from July 30.

ROYAL ROBE (Kelway), **A.M.**—3½ feet, unbranched, with 14 to 16 crowded flowers, 6 or 7 out at a time; flowers 4½ inches diameter, hooded, deep crimson-maroon. Flowering from August 3.

Flowers lavender.

SAPPHO (Dobbie, Morris).—3½ feet, unbranched, with 18 to 20 very closely set flowers, around the spike, 4 or 5 out at a time; flowers 3½ inches diameter, dull greyish-lavender, lower petals creamy-white blotched livid red. Flowering from August 9.

MRS. VAN KONYNENBURG (Konynenburg & Mark).—3½ feet, unbranched, with 14 closely set flowers, 4 out at a time; flowers 4 inches diameter, clear rich lavender self, substance soft. Flowering from August 18.

ALI (Grullemans).—3½ feet, unbranched, with 16 closely set flowers, 4 out at a time; flowers 3½ inches diameter, hooded, lavender-blue, lower petals blotched violet. Flowering from August 9.

Flowers lilac.

AWARDS.

Sweet Lavender, A.M. (c.) August 5, 1927. Raised by Messrs. Coleman and sent by Messrs. Bath, and G. Churcher.

Byron L. Smith, A.M. (c., e., g.) August 12, 1927. Raised by Messrs. Kunderd and sent by Messrs. Bath, and Unwin.

MRS. F. C. PETERS (Unwin).—4 to 4½ feet, branched, with 18 closely set flowers, around the spike, 5 out at a time; flowers 4 inches diameter, pale mauve-pink, lower petal blotched crimson. Flowering from September 3.

SWEET LAVENDER (Bath, Churcher), **A.M.**—4 feet, branched, with 16 closely set flowers, 5 or 6 out at a time; flowers 4½ inches diameter, lilac on creamy-white, lower petals blotched purple, margins somewhat wavy. Flowering from July 25.

LILAC WONDER (C. A. van Zanten, Grullemans).—4 feet, branched, with 14 to 16 closely set flowers, 4 out at a time; flowers 3½ inches diameter, lilac, hooded. Flowering from August 2.

BYRON L. SMITH (Bath, Unwin), **A.M.**—3½ feet, branched, with 18 crowded flowers, 6 or 7 out at a time; flowers 4½ inches diameter, pale lilac, lower petals blotched pale cream, substance soft. Flowering from August 6.

BERTIE SNOW (Bath).—4 feet, unbranched, with 14 crowded flowers, 5 out at a time; flowers 4½ inches diameter, pale lilac, lower petals blotched pale cream. Flowering from August 5.

MURIEL (Bath).—4 feet, unbranched, with 18 closely set flowers, around the spike, 6 out at a time; flowers 4½ inches diameter, hooded, lavender-mauve, lower petal blotched purple. Flowering from August 6.

NORA (C. A. van Zanten).— $3\frac{1}{2}$ feet, unbranched, with 14 closely set flowers, 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, hooded, pale rosy-lavender flaked darker, lower petals blotched magenta. Flowering from August 5.

Flowers lavender-blue.

AWARD.

Catharina, H.C. (c., g.) August 12, 1927. Raised by Mr. Velthuys, sent by Messrs. Bath, Morris, and Dobbie.

VIOLA (Bath).— $3\frac{1}{2}$ feet, branched, with 18 closely set flowers, 5 or 6 out at a time; flowers $3\frac{1}{2}$ inches diameter, white tinged lavender-violet, lower petal blotched violet. Flowering from August 16.

CATHARINA (Bath, Morris, Dobbie). **H.C.**— $3\frac{1}{2}$ feet, unbranched, with 16 to 18 closely set flowers, 4 or 5 out at a time; flowers $3\frac{1}{2}$ to $3\frac{3}{4}$ inches diameter, hooded, lavender flaked lavender-violet, centre of lower petals blotched purple. Flowering from August 4.

CORRY (C. A. van Zanten, Bath).— $3\frac{1}{2}$ feet, unbranched, with 14 closely set flowers, 3 or 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, lavender-blue, lower petals blotched pale cream. Flowering from August 18.

BLUE PEACOCK (Orpington Nurseries).—3 feet, unbranched, with 14 closely set flowers, 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, hooded, lavender-violet, lower petals creamy-white blotched reddish-maroon. Flowering from August 18.

HUBERTUS (Dobbie).— $3\frac{1}{2}$ feet, branched, with 18 closely set flowers, 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, hooded, dull lavender-violet, lower petals lined livid red. Flowering from August 8.

Flowers mauve shaded red.

AWARD.

J. T. Pirie, C. (g.) August 29, 1927. Raised by Messrs. Kunderd and sent by Messrs. W. J. Unwin.

J. T. PIRIE (Unwin), **C.**— $4\frac{1}{2}$ feet, branched, with 18 to 20 closely set flowers, around the spike, 5 or 6 out at a time; flowers $4\frac{1}{2}$ inches diameter, bronzy-plum, lower petals blotched crimson on pale cream. Flowering from August 18.

FIELD MOUSE (Kelway).— $3\frac{1}{2}$ feet, branched, with 16 somewhat closely set flowers, 4 out at a time; flowers 4 inches diameter, dull mauvy-heliotrope, lower petals blotched cerise, substance soft. Flowering from August 15.

SARABAND (Salbach).— $4\frac{1}{2}$ feet, branched, with 18 to 20 closely set flowers, around the stem, 4 or 5 out at a time; flowers 4 to $4\frac{1}{2}$ inches diameter, dull mauvy-heliotrope shaded red, lower petals shaded pale cream at centre. Flowering from August 10.

Flowers purple.

AWARDS.

Purple Glory, A.M. (c., s., g.) ? Raised by Messrs. Kunderd and sent by Messrs. Unwin.

Anna Eberius, H.C. (g.) August 29, 1927. Raised by Messrs. Diener and sent by Messrs. Bath, Unwin, and Hewitt.

Plumtinte, H.C. (g.) August 12, 1927. Raised and sent by Mr. Charles Elliott.

Herada, H.C. (g.) August 12, 1927. Raised by Mr. Austen and sent by Messrs. W. J. Unwin.

Jacoba van Beleren, H.C. (s.) August 29, 1927. Raised by Messrs. Heemskirk, sent by Messrs. Bath, Morris, C. A. van Zanten, and Prins.

Paul Pfitzer, H.C. (g.) August 12, 1927. Raised by Messrs. Pfitzer and sent by Messrs. Konynenburg & Mark.

BEAU BROCADE (Kelway).— $3\frac{1}{2}$ feet, branched, with 12 to 14 somewhat closely set flowers, 4 or 5 out at a time; flowers $5\frac{1}{2}$ inches diameter, star-shaped, pale purple, substance soft. Flowering from August 5.

PURPLE PERFECTION (C. A. van Zanten).—4 feet, unbranched, with 18 to 20 closely set flowers, 4 or 5 out at a time, around the spike; flowers 4 inches diameter, hooded, rich plum-purple, lower petals lined white at centre. Flowering from August 16.

QUEEN OF THE BLUES (C. A. van Zanten).— $3\frac{1}{2}$ feet, unbranched, with 16 to 18 very closely set flowers, 4 or 5 out at a time; flowers 3 inches diameter, pale rosy-purple, centre of lower petals suffused deep purple. Flowering from August 9.

ANNA EBERIUS (Bath, Unwin, Hewitt), **H.C.**— $3\frac{1}{2}$ feet, branched, with 16 closely set flowers, 4 out at a time; flowers 4 inches diameter, bright pale royal purple, lower petals suffused deep purple. Flowering from August 18.

PLUMTINT (Elliott), **H.C.**— $3\frac{1}{2}$ feet, branched, with 18 very closely set flowers, 4 or 5 out at a time; flowers 4 inches diameter, of a redder shade than 'Anna Eberius'; lower petals suffused deep crimson. Flowering from August 6.

HERADA (Unwin), **H.C.**— $3\frac{1}{2}$ feet, unbranched, with 14 somewhat closely set flowers, 4 out at a time; flowers 4 inches diameter, hooded, bright phlox-purple, centre of lower petals suffused royal purple. Flowering from August 11.

JACOBA VAN BEIEREN (Bath, Morris, C. A. van Zanten, Prins), **H.C.**—4 feet, branched, with 18 to 20 very closely set flowers, 4 or 5 out at a time; flowers 4 inches diameter, hooded, rich phlox-purple flaked darker. Flowering from August 16.

CHARLES DICKENS (Konynenburg & Mark).—4 feet, unbranched, with 14 somewhat closely set flowers, 4 out at a time; flowers 4 to $4\frac{1}{2}$ inches diameter, hooded, bright royal purple, lower petals deep purple. Flowering from August 10.

SIDONIA (Morris, Grullemans, Bath).— $3\frac{1}{2}$ feet, branched, with 16 to 18 very closely set flowers, 4 or 5 out at a time; flowers $4\frac{1}{2}$ inches diameter, hooded, royal purple, centre of lower petals lined lemon. Flowering from August 4.

PAUL PFITZER (Konynenburg & Mark), **H.C.**— $3\frac{1}{2}$ feet, unbranched, with 14 somewhat closely set flowers, 4 out at a time; flowers $4\frac{1}{2}$ inches diameter, hooded, deep rich purple, lower petals darker. Flowering from August 9.

PURPLE GLORY (Unwin), **A.M.**— $4\frac{1}{2}$ feet, branched, with 18 closely set flowers, 5 or 6 out at a time; flowers $4\frac{1}{2}$ inches diameter, deep rich purple, lower petals darker, margins somewhat wavy. Flowering from August 11.

SULTAN (Dobbie).— $3\frac{1}{2}$ feet, unbranched, with 14 to 16 very closely set flowers, around the spike, 6 out at a time; flowers $3\frac{1}{2}$ inches diameter, hooded, dull purplish-carmine on cream, lower petals blotched pale cream, substance soft. Flowering from July 22.

Flowers reddish-purple.

MASTER WIETSE (Bath, Webb, C. A. van Zanten).— $4\frac{1}{2}$ feet, branched, with 14 to 16 closely set flowers, 4 out at a time; flowers $3\frac{1}{2}$ to 4 inches, hooded, bright reddish-purple self. Flowering from August 16.

Flowers claret.

AWARD.

Faust, **H.C.** (g.) August 5, 1927. Raised by M. Lemoine, sent by Messrs. Dobbie, and C. A. van Zanten.

MRS. GEORGE W. MOULTON (Grullemans).— $3\frac{1}{2}$ feet, branched, with 18 rather closely set flowers, 4 out at a time; flowers 4 inches diameter, bright reddish-claret, lower petals creamy-white speckled claret. Flowering from August 9.

FAUST (Dobbie, C. A. van Zanten), **H.C.**— $3\frac{1}{2}$ feet, unbranched, with 14 closely set flowers, around the spike, 5 or 6 out at a time; flowers $4\frac{1}{2}$ inches diameter, reddish-claret, margins flaked darker, somewhat hooded. Flowering from July 30.

Flowers violet.

AWARDS.

Baron Jules Hulot, **A.M.** (g.) August 12, 1927. Raised by M. Lemoine, sent by Messrs. Morris, Dobbie, Webb, and C. A. van Zanten.

Duchess of York, **H.C.** (g.) August 12, 1927. Raised by Mr. Velthuys, sent by Messrs. Grullemans, C. A. van Zanten and Dobbie, and by Messrs. Bath as 'Blue Bird' which shares the award.

MR. MARK (Grullemans, Morris).— $3\frac{1}{2}$ feet, unbranched, with 16 closely set flowers, 4 out at a time; flowers $3\frac{1}{2}$ inches diameter, hooded, bluish-violet, lower petals blotched creamy-white. Flowering from August 8.

BARON JULES HULOT (Morris, Dobbie, Webb, C. A. van Zanten), **A.M.**—4 feet, branched, with 16 to 20 closely set flowers, 4 or 5 out at a time; flowers $3\frac{1}{2}$ inches diameter, deep violet-blue self with a small lemon blotch on lower petal. Flowering from August 9.

DUCHESS OF YORK (Grullemans, C. A. van Zanten, Dobbie), **H.C.**—4 feet, unbranched, with 18 closely set flowers, 4 or 5 out at a time; flowers $3\frac{1}{2}$ inches diameter, hooded, violet, lower petals deep violet narrowly lined lemon. Flowering from August 6.

BLUE BIRD (Bath), **H.C.**—Characters as 'Duchess of York.'

NARCISSI AT WISLEY, 1924-27.

FOLLOWING the precedent for making awards to Florists' flowers for their value in the garden only after trial at Wisley, commenced with Dahlias and Roses, the Council added, first Narcissi, and subsequently many other flowers.

The trial of Narcissi was started in 1924, when well over three hundred new or very recent distinct varieties of seedling daffodils were received for trial. Usually six, but sometimes only three, single-nosed bulbs of each variety were received and upon receipt all were "sterilized" in case of eelworm attacks being present. A few were known to be attacked when received, but the treatment sufficed to prevent the disease spreading, and no evidence of it was seen during the whole of the trial.

The bulbs were planted in deep moist soil, deeply cultivated, and dressed with basic slag and bone meal, and in most cases they made good growth.

They were examined at frequent intervals by the Narcissus Committee and note was taken not only of the individual flower, but of freedom of flowering, rapidity of increase, nature of foliage, sturdiness, and such other characters as go to the making of a Narcissus useful in the garden.

In the notes that follow the awards recommended are indicated, as well as the nature of the flower, the time of flowering, the size and rate of increase of the bulbs and so on.

The groups given are those decided upon for the Society's Classificatory list of Daffodils and the following abbreviations occur :—

A.M. = Award of Merit.

H.C. = Highly commended.

C. = Commended.

c. = Award given for excellence as a cut flower.

g. = " " " " in the garden.

m. = " " " " as a market plant.

r. = " " " " growing in the rock garden.

The date of flowering is given for 1927 when all bulbs had been planted at Wisley for such a time as to make comparison of flowering time dependable. If this be made on bulbs received from various places, irregularities are introduced which make such comparison misleading.

AWARDS, DESCRIPTIONS, AND NOTES.

CLASS 1A.

Self-yellow Trumpet Daffodils.

AWARDS.

Sulphur, A.M. (c., g.) April 8, 1927. Raised and sent by Mr. P. D. Williams, Lanarth, St. Keverne.

Florist's Delight, H.C. (g.) April 8, 1927. Raised and sent by Mr. G. L. Wilson, The Knockair, Broughshane, Co. Antrim.

A. W. Tait, H.C. (c., g.) April 22, 1927. Raised by Mr. A. W. Tait and sent by Messrs. Barr, King Street, Covent Garden, W.C.

Refined Gold, H.C. (g.) April 22, 1927. Raised and sent by Messrs. J. R. Pearson, Lowdham, Notts.

Harvester, C. (g.) April 22, 1927. Raised and sent by Mr. P. D. Williams.

Siegfried, C. (g.) April 22, 1927. Raised by Messrs. de Graaff and sent by Messrs. Barr.

SHRAPNEL (Chapman).—Stems 13 inches; flowers well posed; perianth $3\frac{1}{2}$ to $3\frac{3}{4}$ inches diameter, flat, cream; base tinged golden-yellow, margins somewhat recurved; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, golden-yellow. Bulbs large. Rather slow of increase. Shy flowerer. March 12 to April 10. Raised by sender.

SHOGUN (Bliss).—Vigorous; stems 16 inches; flowers inclined to droop; perianth 4 inches diameter, segments occasionally twisted, overlap near the base, creamy-yellow; trumpet $1\frac{1}{2}$ inch diameter, $1\frac{1}{2}$ inch deep, rather spreading at mouth, dull golden-yellow. Bulbs large, slow of increase and medium flowerer. March 10 to April 11. Weardale Perfection \times Glory of Noordwyk. Raised by sender.

POLEMON (Barr).—Vigorous; stem 15 inches, stiff; flowers well posed; perianth $4\frac{1}{2}$ inches diameter, flat, sulphur-cream; trumpet 2 inches wide, $1\frac{1}{2}$ inch deep, rather spreading at mouth, golden-yellow with white tips. Bulb large, rather slow of increase and flowering shyly. April 6 to April 28. Madame de Graaff \times King Alfred. Raised by sender.

AYLMER (Barr).—Stem 14 inches; flower somewhat drooping; perianth $3\frac{1}{2}$ inches diameter, somewhat twisted, creamy-sulphur; trumpet $1\frac{1}{2}$ inch wide and deep, rather spreading at mouth which is frilled, golden-yellow. Bulb large, very slow to increase but a medium flowerer. March 27 to April 20. Raised by sender.

POTENTATE (Pearson).—Vigorous; stems 14 inches, stiff; flower well posed, well above foliage; perianth 4 inches diameter, flat, segments overlap at the base only, very regular, sulphur-cream; trumpet $1\frac{1}{2}$ to 2 inches diameter, $1\frac{1}{2}$ inch deep, mouth expanded, golden-yellow. Bulb large, of medium increase, not very free flowering. March 15 to April 16. Raised by sender.

FAIRY (Pearson, Vanderschoot).—Vigorous; stems 14 inches; flower with a slight tendency to droop; perianth 4 to $4\frac{1}{2}$ inches diameter, flat, sulphur-cream; trumpet $1\frac{1}{2}$ to 2 inches wide, $1\frac{1}{2}$ inch deep, spreading at mouth, golden-yellow. Bulb medium to large, rapid of increase, free flowering. March 10 to April 14. Raised by Messrs. Vanderschoot.

HELIDON (Bliss).—Stem 15 to 16 inches; flower well posed; perianth 4 inches diameter, flat, segments overlapping for a third of their length, sulphur-cream; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, expanded at mouth, bright yellow. Bulb large, slow to increase, shy flowerer. March 24 to April 14. Van Waveren's Giant \times King Alfred 1912. Raised by sender.

GOLDEN HARBINGER (Barr).—Vigorous; stem 15 to 18 inches; flower somewhat drooping; perianth $3\frac{1}{2}$ to $3\frac{3}{4}$ inches diameter, flat, segments overlapping at the base, primrose-yellow; trumpet $1\frac{1}{2}$ inch wide and deep, spreading at the mouth, bright yellow. Bulb of medium size, very slow of increase and a very sparse flowerer. March 15 to April 15. King Alfred \times Yellow Trumpet. Raised by sender.

COMERAGH (Watts).—Vigorous; stem 15 to 18 inches; flower well posed; perianth $3\frac{1}{2}$ inches diameter, flat, segments overlapping for a third of their length, somewhat irregular, bright lemon-yellow; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, spreading at the mouth, margins reflexed, bright buttercup-yellow. Bulb large, of medium increase, not very free flowering. March 12 to April 16. Raised by Mr. J. Lionel Richardson.

BERTRAND (Bliss).—Stems 13 inches, stiff; flower inclined to droop; perianth $3\frac{1}{2}$ to 4 inches diameter, flat, segments overlapping halfway, bright lemon-yellow;

trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{8}$ inch deep, mouth expanded bright buttercup-yellow. Bulb large, of medium increase, not free flowering. March 14 to April 14. Glory of Noordwyk \times King Alfred, 1912. Raised by sender.

BRIGAND (Watts).—Vigorous; stems 17 to 18 inches; flowers well posed; perianth $3\frac{1}{2}$ inches diameter, flat, margins recurving; segments overlap at base, sulphur-yellow; trumpet 2 inches wide, $1\frac{1}{8}$ inch deep, mouth expanded, frilled, bright golden-yellow. Bulb large, slow of increase, not free flowering. March 11 to April 14. Emperor \times King Alfred. Raised by sender.

HARVESTER (Williams), C.—Vigorous; stems 20 inches, stiff; flower well posed; perianth $4\frac{1}{2}$ inches diameter, flat, segments overlap at base, bright sulphur; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{8}$ inch deep, somewhat expanded at mouth, frilled, pale buttercup-yellow. Bulb large, of medium increase, free flowering. March 27 to April 23. Cleopatra \times Yellow Trumpet. Raised by sender.

BULWARK (Wilson).—Stems 15 inches, stiff; flowers well posed; perianth 4 to $4\frac{1}{2}$ inches diameter, flat, segments overlap at base, sulphur-yellow; trumpet 2 inches wide, 2 inches deep, mouth expanded, frilled, deep yellow. Bulb medium to large, of medium increase, shy flowerer. April 6 to April 27. Ben Alder \times Cleopatra. Raised by sender.

FLORIST'S DELIGHT (Wilson), H.C. (g.).—Very vigorous; stems 16 inches; flower inclined to droop; perianth $3\frac{1}{2}$ inches diameter, flat, segments overlapping halfway, bright sulphur-yellow; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{8}$ inch deep, expanded at mouth, deep yellow. Bulb large, rapid of increase, free flowering. March 24 to April 16. Minuet \times King Alfred. Raised by sender.

ROYAL GOLD (Barr).—Stem 16 inches; flower drooping; perianth $3\frac{1}{2}$ inches diameter, flat, segments overlap for a third, somewhat pointed, deep sulphury-yellow; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{8}$ inch deep, somewhat expanded at the mouth, a darker shade than the perianth. Bulb large, very slow of increase, a shy flowerer. March 16 to April 12. Raised by Messrs. de Graaff.

INGOT (Bliss).—Very vigorous; stem 16 inches, stiff; flowers well posed; perianth $3\frac{1}{2}$ inches diameter, flat, segments overlapping for a third of their length, bright sulphur-yellow; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{8}$ inch deep, mouth expanded and frilled, bright buttercup-yellow. Bulb large, of medium increase; not very free flowering. March 24 to April 30. King Alfred \times Monarch. Raised by sender.

POTIKEN (Watts).—Vigorous; stem 18 to 19 inches, stiff; flowers well posed; perianth 4 inches diameter, flat, overlapping at the base, deep sulphur-yellow, tips white; trumpet 2 inches wide, $1\frac{1}{2}$ inch deep, mouth flat and frilled, golden-yellow. Bulb large, slow of increase, shy flowerer. March 17 to April 14. Raised by Mr. J. Lionel Richardson.

SULPHUR (Williams), A.M. (c., g.).—Very vigorous; stem 17 inches, stiff; flowers well posed; perianth $3\frac{1}{2}$ inches diameter, flat; segments overlapping at the base, somewhat pointed, deep sulphur-yellow; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{8}$ inch deep, mouth expanded and frilled, of a deeper shade than the perianth. Bulb of medium size, very rapid of increase, and a free flowerer. March 8 to April 14. Maximus \varnothing \times White Trumpet. Raised by sender.

MUSTAPHA (Barr).—Stem 15 inches, stiff; flower well posed; perianth $3\frac{1}{2}$ inches diameter, margins of segments recurving, overlapping at the base, deep sulphur-yellow; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{8}$ inch deep, mouth expanded and frilled, bright buttercup-yellow. Bulb large, slow of increase; a very shy flowerer. March 24 to April 26. Raised by Messrs. de Graaff.

SEGFRIED (Barr), C. (g.).—Vigorous; stem 16 inches, stiff; flower well posed; perianth $3\frac{1}{2}$ inches diameter, margins of segments recurving, overlapping at the base, deep sulphur-yellow; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{8}$ inch deep, mouth expanded, flat and frilled, golden-yellow. Bulb large, very slow of increase, not very free flowering. March 12 to April 10. Raised by Messrs. de Graaff.

WATERLOO (Pearson).—Vigorous; stem 16 to 18 inches; flower well posed; perianth $4\frac{1}{2}$ inches diameter, margins of segments recurving, overlapping at the base, sulphur-yellow; trumpet 2 inches deep and wide, bright golden-yellow; mouth expanded and frilled. Bulb large, medium of increase, free flowering. March 6 to April 14. Raised by Mr. Engleheart.

DRAKE (Williams).—Vigorous; stem 18 inches; flower inclined to droop; perianth $3\frac{1}{2}$ inches diameter, flat, segments overlapping for a third of their length, bright yellow; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{8}$ inch deep, paler than the perianth; mouth expanded and frilled. Bulb large, rapid of increase, not very free flowering. March 8 to April 14. King Alfred seedling. Raised by sender.

WARWICK (Barr).—Stems 20 inches; flower well posed; perianth $4\frac{1}{2}$ inches diameter, flat, segments overlapping halfway, rich lemon-yellow; trumpet $2\frac{1}{2}$ inches wide, $1\frac{1}{8}$ inch deep, buttercup-yellow, mouth expanded and frilled. Bulb of medium size, very slow of increase; a shy flowerer. April 4 to April 28. Raised by Messrs. de Graaff.

GOLDEN HERALD (Barr).—Stem 11 inches; flower inclined to droop; perianth 3 inches diameter, segments overlapping at the base, deep lemon-yellow; trumpet $1\frac{1}{2}$ inch wide and deep, bright deep buttercup-yellow, mouth expanded and frilled. Bulb of medium size, very slow of increase; a shy flowerer. March 10 to April 14. Raised by Mrs. Backhouse.

A. W. TAIT (Barr), H.C. (c. g.).—Vigorous; stem 16 inches; flower well posed; perianth $3\frac{1}{2}$ inches diameter, segments twisted, pointed, separated, bright rich yellow; trumpet $1\frac{1}{2}$ inch deep and wide, buttercup-yellow, mouth expanded. Bulb of medium size, medium of increase, free flowering. March 6 to April 10. Raised by Mr. A. W. Tait. Maximus type.

HOBOKEN (Vanderschoot).—Vigorous; stem 15 inches; flowers drooping; perianth $3\frac{1}{2}$ inches diameter, deep buttercup-yellow, flat, segments overlapping at the base; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, paler than the perianth, mouth expanded. Bulb large, medium of increase, not very free flowering. March 3 to April 8. Raised by sender.

LATONA (Barr).—Stem 16 inches; flower drooping; perianth $3\frac{1}{2}$ inches diameter, bright buttercup-yellow, margins of segments recurving; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, bright buttercup-yellow, mouth expanded and frilled. Bulb large, very slow of increase, a shy flowerer. April 6 to April 28. Yellow Trumpet \times Weardale Perfection. Raised by sender.

ALASNAM (Barr).—Stem 18 inches; flower well posed; perianth $3\frac{1}{2}$ inches diameter, flat, segments overlapping at the base, pale golden-yellow tipped white; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, a shade paler than the perianth, mouth expanded and frilled. Bulb of medium size, slow of increase; a shy flowerer. March 15 to April 14. Raised by Messrs. de Graaff.

CLARION (Lower).—Stem 14 inches; flower well posed; perianth $2\frac{1}{2}$ inches diameter, flat, segments overlapping for a third of their length, bright golden-yellow; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, a shade paler than the perianth, mouth expanded and frilled. Bulb large, medium of increase; a shy flowerer. April 6 to April 27. Monarch \times King Alfred. Raised by sender.

HAWBERK (Cranfield).—Stem 12 inches; flower well posed; perianth $3\frac{1}{2}$ inches diameter, flat, segments separated, pointed, buttercup-yellow; trumpet $1\frac{1}{2}$ inch wide and deep, buttercup-yellow, mouth expanded and frilled. Bulb small, medium of increase; a very shy flowerer. March 25 to April 26. Raised by Mr. Engleheart.

REFINED GOLD (Pearson), H.C. (g.).—Vigorous; stem 16 to 18 inches, stiff; flower well posed; perianth $3\frac{1}{2}$ inches diameter, flat, bright golden-yellow tipped white, segments overlapping for a third of their length; trumpet $1\frac{1}{2}$ inch wide and deep, bright golden-yellow, mouth expanded and frilled. Bulb large, medium of increase, free flowering. March 12 to April 14. A chance seedling. Raised by senders.

CLASS 1B.

Trumpet varieties with white flowers.

AWARD.

Mendip, C. (g.) April 22, 1928. Raised and sent by Mr. F. H. Chapman, The Knoll, Rye, Sussex.

SILVER GIFT (Barr).—Stem 14 inches, stiff; flower well posed; perianth $3\frac{1}{2}$ inches diameter, flat, some segments twisted, creamy-white, segments overlapping for a quarter of their length; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, creamy-white, expanded at the mouth. Bulb of medium size, slow of increase; a shy flowerer. April 6 to May 3. Raised by Messrs. de Graaff.

MENDIP (Chapman), C. (g.).—Vigorous; stem 13 inches, stiff; flower drooping; perianth 4 inches diameter, flat, segments overlapping for a quarter of their length, creamy-white; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, very pale cream, expanded at the mouth. Bulb of medium size, medium of increase; free flowering. April 1 to May 3. Treasure Trove \times Lady Mayoress. Raised by sender.

CLAIR DE LUNE (Cranfield).—Vigorous; stem 13 inches; flowers somewhat drooping; perianth $3\frac{1}{2}$ inches diameter, flat, segments overlapping at the base, pale creamy-white; trumpet $1\frac{1}{2}$ inch wide and deep, creamy-white, mouth somewhat expanded. Bulb medium to large, medium of increase, free flowering. March 27 to April 16. Raised by Mr. Engleheart.

OLHAIN (Watts).—Stem 11 inches; flower drooping; perianth $3\frac{1}{2}$ inches diameter, flat, segments overlapping for a third of their length, creamy-white; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, deep cream. Bulb large, rather slow to increase, shy flowerer. April 7 to May 3. Raised by sender.

BRENIG (Watts).—Vigorous; stem 12 inches; flower semi-drooping; perianth $3\frac{1}{2}$ inches diameter, flat, segments overlapping for a third of their length, creamy-white; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, at first pale primrose, when fully grown white, mouth expanded. Bulb large, medium of increase, not very free flowering. April 6 to April 29. Madame de Graaff \times Weardale Perfection. Raised by sender.

NOBLESSE (Barr).—Vigorous; stem 16 inches, stiff; flower well posed; perianth $4\frac{1}{2}$ inches diameter, creamy-white, margins of segments recurving, segments overlapping at the base, inflexed; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, pale sulphury-cream, fading, mouth expanded, somewhat frilled. Bulb large, medium of increase, not very free flowering. April 7 to May 3. Raised by Mr. E. M. Crosfield.

DAISY CUMBERLEGE (Lower).—Vigorous; stem 15 inches, stiff; flower well posed; perianth $4\frac{1}{2}$ inches diameter, creamy-white, flat, segments overlapping for a third of their length, inflexed; trumpet $1\frac{1}{2}$ inches wide, 2 inches deep, pale sulphury-cream, fades, mouth expanded and frilled. Bulb large, medium of increase, a shy flowerer. April 6 to April 28. Cleopatra \times Madame de Graaff. Raised by sender.

CLASS 1C.

Trumpet varieties with trumpet deeper in colour than perianth.

AWARDS.

White Conqueror, C. (g.) Raised by the late Mrs. R. O. Backhouse and sent by Mr. G. L. Wilson.

Hawthorn, C. (g.) April 22, 1927. Raised and sent by Mr. F. H. Chapman.

Parth, C. (g.) April 22, 1927. Raised and sent by Mr. P. D. Williams.

FLORENCE PEARSON (Pearson).—Vigorous; stem 17 inches, stiff; flower drooping; perianth $3\frac{1}{2}$ inches diameter, creamy-white, margins of segments recurving, segments overlapping at the base, inflexed; trumpet $1\frac{1}{2}$ inch wide and deep, pale sulphury-cream, mouth expanded, somewhat frilled. Bulb large, of medium increase, free flowering. March 31 to April 20. Emperor \times Madame de Graaff 1905. Raised by sender.

WHITE CONQUEROR (Wilson), C. (g.).—Vigorous; stem 20 inches, stiff; flower well posed; perianth $4\frac{1}{2}$ inches diameter, creamy-white, flat, segments overlapping halfway, somewhat inflexed; trumpet $1\frac{1}{2}$ inch wide, 2 inches deep, pale sulphur-cream, mouth somewhat expanded. Bulb large, rapid of increase, free flowering. March 30 to April 27. Raised by the late Mrs. R. O. Backhouse.

PERKER (Cranfield).—Stem 12 inches; flower drooping; perianth 3 inches diameter, flat, segments overlapping for a third of their length, creamy-white; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, pale sulphury-cream, fades, mouth somewhat expanded. Bulb of medium size, rapid to increase, not very free flowering. April 1 to April 27. Raised by Mr. Haydon.

GREYNA (Williams).—Stem 14 inches; flower inclined to droop; perianth $3\frac{1}{2}$ inches diameter, flat, overlapping for a third of their length, pale creamy-white, middle of segments tinged yellowish; trumpet $1\frac{1}{2}$ inch wide and deep, pale sulphury-cream, fading, mouth expanded and frilled. Bulb of medium size, rapid of increase, not very free flowering. March 24 to April 20. Raised by sender.

POSTMASTER (Chapman).—Vigorous; stem 18 inches, stiff; flower well posed; perianth 4 inches diameter, flat, segments overlapping for a third of their length, creamy-white; trumpet 2 inches wide, $1\frac{1}{2}$ inch deep, pale sulphur, mouth somewhat expanded and frilled. Bulb large, slow to increase, a shy flowerer. March 28 to April 28. Weardale Perfection \times Duke of Bedford. Raised by sender.

MOIRA O'NEILL (Wilson).—Vigorous; stem 18 inches, stiff; flower well posed; perianth 4 inches diameter, flat, segments overlapping for a third of their length, creamy-white; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, pale sulphur, mouth somewhat expanded. Bulb large, medium of increase, not very free flowering. March 29 to April 19. Raised by Mr. Engleheart.

HYMEN (Barr).—Vigorous; stem 14 inches, stiff; flower well posed; perianth $3\frac{1}{2}$ inches diameter, flat, segments overlapping for a third of their length, cream; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, pale sulphur, mouth expanded and frilled. Bulb large, rapid of increase, free flowering. March 26 to April 21. Raised by sender.

SIR GAWAIN (Barr).—Stem 14 inches, stiff; flower well posed; perianth $3\frac{1}{2}$ inches diameter, flat, incurving, segments overlapping for a third of their

length, cream; trumpet $1\frac{1}{2}$ inch wide and deep, pale sulphur-yellow, mouth expanded and somewhat frilled. Bulb large, rather slow to increase, not very free flowering. March 27 to April 19. Peter Barr \times King Alfred. Raised by sender.

QUEEN MAYA (Barr).—Very vigorous; stem 22 inches, stiff; flower well posed; perianth $3\frac{1}{2}$ inches diameter, flat, incurving, segments overlapping for a third, cream; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, sulphur-yellow, mouth expanded and frilled. Bulb large, of medium increase, free flowering. March 31 to April 27. Raised by Mr. C. Dawson.

LADY MINE (Pearson).—Vigorous; stem 17 inches; flower drooping; perianth $3\frac{1}{2}$ inches diameter, flat, segments overlapping halfway, creamy-white; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, bright sulphur. Bulb large, rapid of increase, very free flowering. March 31 to April 28. Raised by sender.

CRANFIELD (Cranfield).—Vigorous; stem 17 inches; flower somewhat drooping; perianth 4 inches diameter, flat, segments overlapping halfway, cream; trumpet $1\frac{1}{2}$ inch wide, 2 inch deep, bright sulphur-yellow, mouth somewhat expanded, frilled. Bulb of medium size, rapid of increase, not very free flowering. March 31 to April 19. Raised by Mr. Haydon.

WATTEAU (Barr).—Vigorous; stem 15 inches; flower well posed; perianth $3\frac{1}{2}$ inches diameter, segments twisted and separated, somewhat pointed, dull cream; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, deep dirty sulphur, mouth straight, frilled. Bulb of medium size, rapid of increase, not very free flowering. March 12 to April 9. Raised by Messrs. de Graaff.

ARDAVON (Barr).—Stem 18 inches; flower somewhat drooping; perianth 4 inches diameter, flat, segments overlapping for a third of their length, cream; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, deep sulphur-yellow, mouth somewhat expanded and frilled. Bulb of medium size, very slow to increase, a shy flowerer. April 7 to May 2. Raised by sender.

DANESFIELD (Barr).—Stem 17 inches; flower well posed; perianth $4\frac{1}{2}$ inches diameter, flat, segments overlapping for a third of their length, cream, reverse with a greenish stripe at the middle; trumpet $1\frac{1}{2}$ inch wide and deep, deep sulphur-yellow, mouth expanded and frilled. Bulb large, slow to increase, not very free flowering. March 27 to April 14. Raised by sender.

CYANE (Barr).—Stem 14 to 15 inches; flower drooping; perianth $3\frac{1}{2}$ inches diameter, flat, some segments somewhat twisted, overlapping halfway, cream; trumpet $1\frac{1}{2}$ inch wide and deep, sulphur-yellow, mouth somewhat expanded and frilled. Bulb of medium size, slow to increase, a shy flowerer. April 6 to April 27. Raised by sender.

HAWTHORN (Chapman), C. (g.).—Vigorous; stem 16 inches, stiff; flower well posed; perianth 4 inches diameter, flat, segments overlapping halfway, cream; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, sulphur-yellow, mouth expanded. Bulb of medium size, rapid of increase, not very free flowering. April 6 to May 3. Raised by sender.

MR. BOWLES (Vanderschoot).—Vigorous; stem 16 inches, stiff; flower well posed; perianth $3\frac{1}{2}$ inches diameter, flat, margins of segments recurving, segments overlapping for a third of their length, cream, base sulphur; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, bright yellow, mouth expanded. Bulb of medium size, rapid of increase, free flowering. March 12 to April 9.

COMMANDANT (Vanderschoot).—Vigorous; stem 16 inches, stiff; flower well posed; perianth $4\frac{1}{2}$ inches diameter, flat, segments overlapping at the base, somewhat inflexed, somewhat pointed, cream; trumpet 2 inches wide, $2\frac{1}{2}$ inches deep, pale buttercup-yellow, mouth expanded. Bulb of medium size, medium of increase, not very free flowering. March 8 to April 9.

CRISPA (Vanderschoot).—Vigorous; stem 17 inches, stiff; flower well posed; perianth $4\frac{1}{2}$ inches diameter, flat, segments overlapping for a quarter of their length, inflexed, somewhat pointed, very pale sulphur, fading; trumpet 2 inches wide and deep, pale buttercup-yellow, mouth expanded. Bulb medium to large, rapid of increase, free flowering. March 8 to April 9.

PARTH (Williams), C. (g.).—Vigorous; stem 18 inches, stiff; flower well posed; perianth 4 inches diameter, flat, segments overlapping at the base, regular, creamy-sulphur; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, bright yellow, mouth expanded and frilled. Bulb large, rapid of increase, not very free flowering. March 12 to April 10. Raised by sender.

HERALD (Vanderschoot).—Vigorous; stem 20 inches, stiff; flower well posed; perianth $4\frac{1}{2}$ inches diameter, margins of segments recurving, segments overlapping for a quarter of their length, inflexed, deep creamy-white; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, bright yellow, mouth expanded and somewhat frilled. Bulb large, rapid of increase, free flowering. March 8 to April 10.

HARBINGER (Vanderschoot).—Vigorous; stem 20 inches, stiff; flower well posed; perianth $4\frac{1}{2}$ inches diameter, flat, segments overlapping for a third of

their length, cream, base and margins sulphur; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, bright buttercup-yellow, mouth expanded. Bulb large, rapid of increase, free flowering. March 8 to April 9.

PURITY (Vanderschoot).—Vigorous; stem 18 inches, stiff; flower well posed; perianth 4 inches diameter, flat, margins of segments recurving, segments overlapping for a quarter of their length, cream, base sulphur; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, bright buttercup-yellow, mouth expanded. Bulb large, medium of increase, not free flowering. March 12 to April 9.

LAURA (Vanderschoot).—Vigorous; stem 15 inches, stiff; flower drooping; perianth $4\frac{1}{2}$ inches diameter, flat, segments overlapping halfway, deep cream; trumpet $1\frac{1}{2}$ inch wide and deep, bright yellow, mouth expanded. Bulb large, medium of increase, not very free flowering. March 31 to April 19.

CECIL HAYWARD (Starmer).—Vigorous; stem 17 inches, stiff; flower well posed; perianth 4 inches diameter, flat, segments overlapping at the base, bright creamy-white; trumpet $1\frac{1}{2}$ inch wide and deep, bright golden-yellow, mouth expanded and frilled. Bulb large, rapid of increase, not very free flowering. March 3 to April 6.

REV. J. JACOB (Vanderschoot).—Vigorous; stem 14 inches, stiff; flower somewhat drooping; perianth 4 inches diameter, flat, inflexed, segments overlapping for a quarter of their length, creamy-white; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, deep buttercup-yellow, mouth somewhat expanded. Bulb large, rapid of increase, a shy flowerer. March 22 to April 7.

THORWALDSEN (Vanderschoot).—Vigorous; stem 13 inches, stiff; flower well posed; perianth $3\frac{1}{2}$ inches diameter, flat, inflexed, segments overlapping for a quarter of their length, deep cream, reverse with a middle yellow stripe; trumpet $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$ inch deep, bright buttercup-yellow, mouth somewhat expanded. Bulb of medium size, rapid of increase, not very free flowering. March 10 to April 6.

CLASS 2A.

Yellow varieties with corona shorter than perianth.

AWARDS.

Grenade, A.M. (g.) April 8, 1927. Raised by Rev. G. Engleheart, introduced by Messrs. Barr and sent by Mr. W. B. Cranfield, of Enfield.

Egryn, H.C. (g.) April 8, 1927. Raised and sent by Mr. W. A. Watts, of The Welsh Bulb Farms, St. Asaph.

Bonaparte, H.C. (g.) April 8, 1927. Raised and sent by Messrs. Barr.

Jubilant, H.C. (g., m.) April 8, 1927. Raised and sent by Mr. P. D. Williams.

Breila, C. (g.) April 8, 1927. Raised and sent by Mr. W. A. Watts.

Yellow Standard, C. (g.) April 8, 1927. Raised and sent by Messrs. Barr.

KING OF HOLLAND (Vanderschoot).—Stem 18 inches; flower well posed, $3\frac{1}{2}$ inches diameter; free-flowering; perianth flat, rather discrete, sulphur; corona $\frac{1}{2}$ inch deep, funnel shaped, pale orange much deeper at mouth. Bulbs large, rapid of increase. March 24 to April 9.

BURNET (P. D. Williams).—Vigorous with dull grey, very spreading, and drooping foliage. Stem 18 inches; perianth $3\frac{1}{2}$ inches diameter, flat, segments overlapping halfway, pale sulphur; corona $\frac{1}{2}$ inch deep, funnel shaped, deep orange, deeper towards mouth. Bulbs of medium size and rapid increase; not very free flowering. March 31 to April 28. Raised by sender. Beacon ♀ × Tamerlane ♂.

MERIT (P. D. Williams).—Foliage spreading and drooping. Stem 20 inches, fairly strong. Flower rather drooping; perianth 4 inches diameter, overlapping for $\frac{1}{2}$, flat, deep cream; corona 1 inch deep, funnel shaped, bright sulphur yellow. Bulbs large, of medium increase and freedom of flower. March 26 to April 11. Raised by sender. Pilgrim ♀ × White Trumpet ♂.

BREILA (Watts) C. (g.)—Very vigorous, with nearly erect wide foliage. Stem 20 inches, somewhat drooping. Flowers freely produced; perianth $4\frac{1}{2}$ inches diameter, segments overlapping at base, creamy primrose, with darker incurving margins; corona $\frac{1}{2}$ inch deep, broadly funnel shaped, deep lemon with broad orange-yellow edge. Bulb large, of free increase. Very early. March 3 to April 6. Sir Watkin × Ornatus.

CORYN (Watts).—Stem 22 inches, erect. Flowers droop at neck, freely produced; perianth 4 inches diameter, flat segments, overlapping $\frac{1}{2}$, deep creamy sulphur; corona $1\frac{1}{2}$ inch deep, tubular with frilled expanding mouth, bright yellow. Bulb medium to large, fairly free of increase. March 15 to April 17. Raised by sender.

NOBLE (Pearson).—Stem 20 inches. Flowers well posed; perianth $4\frac{1}{2}$ inches diameter, flat, segments overlapping $\frac{1}{2}$, very pale sulphur; corona 1 inch deep,

funnel shaped, bright yellow. Bulb large, free of increase. April 1 to April 30. Apt to be damaged by bad weather.

LADY DE BATHE (Pearson).—Foliage spreading and drooping. Stem 20 inches. Flowering rather drooping; perianth 4 inches diameter, segments flat, overlapping $\frac{1}{2}$, very pale sulphur; corona $1\frac{1}{2}$ inch deep, tubular with frilled expanding mouth, bright yellow. Bulb large, of fair increase, flowering fairly freely. April 1 to April 30. Raised by Rev. G. Engleheart.

JAMBOREE (Chapman).—Stem 18 inches. Flower well posed; perianth $4\frac{1}{2}$ inches, segments flat with a tendency to recurve at margins, overlapping $\frac{1}{2}$, deep satiny sulphur yellow; corona $1\frac{1}{2}$ inch deep, funnel shaped with frilled expanding mouth, bright orange yellow. Bulbs large, fairly free of increase and flower. March 11 to April 16. Raised by sender. King Alfred \times Homespun.

CENIG (Watts).—Not vigorous. Foliage drooping. Stem 16 inches, fairly strong. Flowers rather irregular; perianth $3\frac{1}{2}$ inches diameter, segments separate, inclined to curve inwards at margin, satiny sulphur; corona $\frac{1}{2}$ inch deep, expanding, deep yellow with serrated orange edge. Bulbs of medium size, slow to increase and not free flowering. March 13 to April 8. Raised by sender. Sir Watkin \times Ornatus.

CARAN (Watts).—Foliage rather spreading. Stem 18 inches. Perianth $3\frac{1}{2}$ inches diameter, segments flat, overlapping at base, pale sulphur; corona $\frac{1}{2}$ inch deep, cup shaped, bright pale yellow. Bulb of medium size, slow of increase and not free of flower. March 24 to April 11. Raised by sender.

EGRIN (Watts), H.C. (g.).—Stem 20 inches. Flowers very freely produced, rather drooping from neck; perianth $4\frac{1}{2}$ inches diameter, segments separate, reflexing as flower ages, deep cream with sulphur flush at base; corona funnel shaped with straight mouth, bright yellow. Bulb of medium size and free increase. March 8 to April 10. Raised by sender.

GOLDEN HOPE (Barr).—Stem 18 inches. Flowers erect, not very free; perianth 4 inches diameter, segments flat, overlapping halfway, deep sulphur; corona $1\frac{1}{2}$ inch deep, tubular with frilled expanding mouth, bright buttercup yellow. Bulb large, of slow increase. March 25 to April 16. Raised by sender. King Alfred \times Maggie May.

BONAPARTE (Barr), H.C. (g.).—Stem 16 inches. Flowers well posed; perianth $3\frac{1}{2}$ inches diameter, segments flat, overlapping $\frac{1}{2}$, pale sulphur cream; corona $1\frac{1}{2}$ inch deep, funnel shaped, bright yellow. Bulb rather small, not rapid of increase, flowering with fair freedom. March 6 to April 4. Raised by sender.

DERWIN (Watts).—Foliage rather spreading and apt to become yellowish. Stem 20 inches, drooping. Perianth $4\frac{1}{2}$ inches diameter, segments mostly flat, separate, deep cream with incurving margins and base pale sulphur; corona $\frac{1}{2}$ inch deep, funnel shaped, bright yellow. Bulb rather large, of fairly free increase. Free flowering. March 24 to April 14. Raised by sender.

GRENADE (Cranfield), A.M. (g.).—Foliage dark greyish green rather spreading. Stem 24 inches. Flowers freely produced, drooping; perianth $3\frac{1}{2}$ inches diameter; segments flat, overlapping at base, margins inclined to recurve, deep sulphur yellow; corona $1\frac{1}{2}$ inch, tubular with frilled expanding mouth, bright orange-yellow. Bulb of medium size and free increase. March 25 to April 16.

JUBILANT (P. D. Williams), H.C. (g., m.).—Stem 22 inches. Flowers produced with moderate freedom, well posed. Perianth $3\frac{1}{2}$ inches, segments flat with slightly incurved margins, overlapping $\frac{1}{2}$, deep sulphur yellow; corona 1 inch deep, funnel shaped, with frilled mouth, bright buttercup yellow. Bulbs of medium size and increase. March 26 to April 16. King Alfred seedling.

YELLOW STANDARD (Barr), C. (g.).—Stem 18 inches. Flowers erect, freely produced; perianth $3\frac{1}{2}$ inches, segments flat, overlapping $\frac{1}{2}$, deep sulphur with white tips; corona $\frac{1}{2}$ inch, funnel shaped with scarcely frilled margin, bright deep yellow. Bulb large, of fairly free increase. March 11 to April 10. Raised by sender.

IXION (Barr).—Foliage rather spreading. Stem 18 inches. Flower erect; perianth $4\frac{1}{2}$ inches, segments flat, overlapping $\frac{1}{2}$, lemon yellow; corona 1 inch deep, funnel shaped, very deep orange tinged red with orange base. Bulb rather small, of medium increase and flowering. April 6 to April 21. Raised by sender. An Albatross seedling.

GULLIVER (P. D. Williams).—Stem 17 inches. Flower well posed; perianth $3\frac{1}{2}$ inches, segments flat, overlapping $\frac{1}{2}$, sulphur cream with white tips; corona $\frac{1}{2}$ inch deep, straight, orange-red with orange base. Bulb rather small and of slow increase. April 6 to May 5. Raised by sender.

PRINCESS VICTORIA (Watts).—Foliage apt to become yellow, drooping for half length. Stem 20 inches. Flowers droop at neck, freely produced; perianth $3\frac{1}{2}$ inches diameter, segments flat with some margins incurved, overlapping at base, pale satiny sulphur; corona $\frac{1}{2}$ inch deep, funnel shaped, deep sulphur

yellow with a broad reddish band at mouth. Bulb rather small, of free increase. Raised by sender. Sir Watkin \times Ornatus.

YELLOW GIANT (Barr).—Stem 17 inches. Flowering sparsely. Perianth 4 inches diameter, segments flat, overlapping one half, sulphur; corona 1 inch deep, funnel shaped, scarcely frilled at mouth, bright pale yellow. Bulb of medium size and slow increase. March 24 to April 14. Raised by sender.

SESOSTRIS (Barr).—Stem 16 inches. Flowering with fair freedom. Perianth $4\frac{1}{2}$ inches diameter, segments flat, overlapping $\frac{1}{2}$, pale sulphur tinged white, not clear; corona 1 inch deep, funnel shaped, bright yellow. Bulb of medium size, fairly free of increase. March 15 to April 14. Raised by sender.

E. G. QUICK (Barr).—Stem 17 inches. Flowers droop at neck, freely produced; perianth $3\frac{1}{2}$ inches diameter, segments with incurved margins, separate, deep sulphur; corona $\frac{3}{4}$ inch deep, funnel shaped, bright yellow. Bulb of medium size, fairly free of increase. March 16 to April 10. Raised by Mr. Dawson.

CLASS 2B.

Bicolor varieties with corona shorter than perianth.

AWARDS.

H.M. Queen Alexandra, A.M. (g.) April 8, 1927. Raised and sent by Mr. Watts.

Amber, H.C. (c.) April 22, 1927. Raised by Rev. G. Engleheart, introduced by Mrs. Currey, and sent by Mr. Cranfield.

Steadfast, C. (g.) April 22, 1927. Raised by Rev. G. Engleheart, introduced and sent by Messrs. J. R. Pearson.

LEONIE ALBA (Vanderschoot).—Stem 18 inches. Flowers rather drooping, not very free; perianth $3\frac{1}{2}$ inches, segments flat, overlapping $\frac{1}{2}$, white with sulphur base; corona $\frac{1}{2}$ inch deep, funnel shaped, deep sulphur with orange tinge at mouth. Bulb of medium size, fairly free of increase. April 1 to April 28.

STAR (Vanderschoot).—Stem 15 inches. Flowers not very free, erect; perianth 3 inches diameter, segments with incurved margins overlapping at base only, cream; corona $\frac{1}{2}$ inch deep, cup shaped, pale yellow. Bulb of medium size and rate of increase. March 11 to April 12.

BELARIUS (Barr).—Stem 20 inches. Flowers rather sparse; perianth 4 inches diameter, segments flat with some margins slightly incurved, creamy white; corona $1\frac{1}{2}$ inch deep, with expanded mouth, bright sulphur. Bulb of medium size and rate of increase. April 1 to April 26. Raised by sender. Maggie May \times Weardale Perfection.

PROTEUS (Barr).—Stem 17 inches. Flowers sparse, erect; perianth 4 inches diameter, flat, segments overlapping $\frac{1}{2}$, cream with darker base; corona $1\frac{1}{2}$ inch deep, tubular, bright sulphur. Bulb of medium size, very slow to increase. April 12 to May 4. Raised by sender. Red Beacon \times King Alfred.

AMBER (Cranfield), **H.C. (c.)**.—Foliage rather spreading. Stem 16 inches. Flowers well posed, freely produced, good for cutting; perianth $3\frac{1}{2}$ inches diameter, segments slightly incurving at margins, overlapping $\frac{1}{2}$, pale creamy white; corona $1\frac{1}{2}$ inch, tubular, straight at mouth, deep yellow. Bulb large, of medium increase. April 12 to May 5.

ALED (Watts).—Stem 17 inches. Flowers drooping, rather irregular; perianth $3\frac{1}{2}$ inches, segments usually flat, overlapping $\frac{1}{2}$, creamy white; corona $1\frac{1}{2}$ inch, tubular with expanding mouth, bright pale sulphur. Bulb of medium size and fairly rapid increase. April 1 to April 16. Raised by sender. Minnie Hume \times Weardale Perfection.

H.M. QUEEN ALEXANDRA (Watts), **A.M. (g.)**.—Stem 18 inches. Flowers drooping somewhat at neck, fairly free; perianth $3\frac{1}{2}$ inches, segments overlapping $\frac{1}{2}$, with recurved margins, creamy white; corona $1\frac{1}{2}$ inch, funnel shaped with expanding mouth, sulphur. Bulb of medium size and increase. March 13 to April 12. Minnie Hume \times Weardale Perfection.

MELYN (Watts).—Stem 18 inches. Flowers apt to droop, fairly free; perianth $3\frac{1}{2}$ inches diameter, segments rather irregular, overlapping $\frac{1}{2}$, creamy white; corona $1\frac{1}{2}$ inch, tubular with expanding mouth, sulphur. Bulb of medium size and increase. March 17 to April 19. Raised by sender.

STEADFAST (Pearson), **C. (g.)**.—Foliage rather spreading and crowded. Stem 16 inches. Flowers very freely produced (10 in 1925, 22 in 1926, 46 in 1927), erect; perianth $3\frac{1}{2}$ inches diameter, flat, segments overlapping $\frac{1}{2}$, creamy white with deeper base; corona 1 inch deep, funnel shaped, bright yellow. Bulb rather small, of rapid increase. April 15 to May 6.

PRINCE FUSHIMI (Barr).—Foliage spreading with drooping tips. Stem 16 inches, drooping somewhat. Flowers produced fairly freely; perianth $4\frac{1}{2}$ inches

diameter, flat, separated, creamy white; corona funnel shaped, margins broadly crenate, pale sulphur with broad orange-buff edge. Bulbs increasing fairly well. April 11 to May 3. Raised by Mr. Welchman.

CASIMIR (Barr).—Foliage rather spreading. Stems 18 inches. Flowers fairly free, drooping at neck; perianth 4 inches diameter, segments flat, overlapping $\frac{1}{2}$, white; corona $1\frac{1}{2}$ inch deep, rather narrow, funnel shaped, cream. Bulb rather small, of fair increase. March 31 to April 17. Raised by Mr. Dawson.

CLASS 3A.

Yellow varieties with short corona.

AWARDS.

Treskerby, A.M. (g., m.) April 8, 1927. Raised and sent by Mr. P. D. Williams.
Nanny Nunn, H.C. (g., c.) April 22, 1927. Raised by Mrs. Backhouse and sent by Messrs. Barr.

Owen, C. (g.) April 22, 1927. Raised by Messrs. Backhouse and sent by Mr. Watts.

CHEVRON (Chapman).—Foliage apt to become yellow. Stem 15 inches. Flower well posed, not very free; perianth $3\frac{1}{2}$ inches diameter, segments channelled, separate and somewhat reflexed, sulphur with pale tips; corona $\frac{1}{2}$ inch deep, funnel shaped, bright orange-yellow. Bulb small, increase medium. March 11 to April 6. Raised by sender.

TRESKERBY (P. D. Williams), A.M. (g., m.)—Foliage rather drooping. Stem 20 inches. Flowers freely produced, well held. Perianth $4\frac{1}{2}$ inches diameter, flat, overlapping $\frac{1}{2}$, cream with sulphur base; corona $\frac{3}{4}$ inch deep, widely funnel shaped, bright rich orange-red. Bulb of medium size and rapid increase. March 24 to April 20. Beacon \times Tamerlane.

NANNY NUNN (Barr), H.C. (g., c.)—Stem 16 inches, rather drooping. Flowers erect, fairly free; perianth $3\frac{1}{2}$ inches, regular flat, overlapping $\frac{1}{2}$, pale cream with darker base; corona $\frac{3}{4}$ inch deep, funnel shaped, deep orange-red at mouth, orange at base. Bulb narrow, of medium increase.

RED GAUNTLET (Barr).—Stem 15 inches, rather drooping. Flowers sparse; perianth 3 inches diameter, segments with margins rather recurved at base, overlapping $\frac{1}{2}$, pale creamy white; corona $\frac{3}{4}$ inch deep, funnel shaped, bright orange-red. Bulb small, slow of increase. April 14 to May 3. Raised by Mrs. Backhouse.

CRIMSON BRAID (Seymour Cobley).—Foliage drooping at tips. Stem 20 inches. Flower erect, fairly freely produced; perianth $2\frac{1}{2}$ inches diameter, segments overlapping $\frac{1}{2}$, much reflexed, dull creamy white; corona $\frac{1}{2}$ inch, deep nearly flat, pale lemon with broad deep orange-red edge. Bulbs small, of medium increase. April 19 to May 6. Raised by The Brodie of Brodie.

MRS. DAVID WALKER (Watts).—Foliage rather spreading and drooping. Stem 18 inches. Flowers drooping, fairly free; perianth $3\frac{1}{2}$ inches, segments rather twisted, incurved at margins, inflexed, separate, deep creamy yellow with margins and base pale sulphur white; corona $\frac{1}{2}$ inch deep, narrow funnel shape, orange with upper $\frac{1}{2}$ orange-red. Bulb of medium size and rather slow increase. March 8 to April 9. Raised by Mrs. Backhouse.

OWEN (Watts), C. (g.)—Foliage drooping at tips. Stem 18 inches. Flowers well posed, free; perianth $3\frac{1}{2}$ inches diameter, segments flat, overlapping $\frac{1}{2}$, pale lemon; corona $\frac{1}{2}$ inch deep, funnel shaped, deep orange. Bulb rather small, of fair increase. April 6 to April 27.

CLASS 3B.

Bicolor varieties with short corona.

AWARD.

Sunrise, A.M. (m.) March 17, 1926. Raised by Mrs. Backhouse, sent by Mr. Watts.

DOMINO (Watts).—Foliage with drooping tips. Stem 18 inches. Flowers drooping, not free; perianth $3\frac{1}{2}$ inches diameter, segments overlapping $\frac{1}{2}$, margins incurved, pale creamy white; corona $\frac{1}{2}$ inch deep, funnel shaped, bright orange with paler base. Bulb rather small and slow of increase. Raised by Mrs. Backhouse.

PRECIOUS (Watts).—Not vigorous. Stem 22 inches. Flowers erect; perianth $3\frac{1}{2}$ inches diameter, flat, overlapping halfway, creamy white; corona $\frac{1}{2}$ inch deep, basin shaped, frilled, pale sulphur, edged orange. Bulb small, of fair increase. April 6 to May 1. Raised by Mrs. Backhouse.

PYRRHA (Barr).—Weak and of slow increase. Flowers sparse. Stem 15 inches. Perianth $2\frac{1}{2}$ inches diameter, overlapping halfway, much reflexed, creamy white; corona $\frac{1}{2}$ inch deep, nearly flat, pale orange with frilled orange-red mouth. Bulbs small. April 19 to May 1. Raised by Rev. G. Engleheart.

SUNRISE (Watts), A.M. (m.).—Foliage rather spreading, yellowish. Stem 18 inches. Flowers erect, fairly free; perianth 3 inches diameter, segments flat, overlapping $\frac{1}{2}$, satiny white with sulphur streaks and base; corona $\frac{1}{2}$ inch, funnel shaped, pale orange-yellow with red margin fading with age. Bulb small, of good increase. March 15 to April 9.

SUNNY LASS (Barr).—Foliage drooping. Stem 15 inches. Flowers drooping, sparse; perianth 3 inches diameter, segments channelled, reflexed, white; corona $\frac{1}{2}$ inch deep, funnel shaped, pale orange, edge orange-red. Bulb narrow, slow of increase. March 30 to April 26. Raised by Mr. Dawson. Lulworth \times Horace.

OLIVIA (Barr).—Stem 15 inches. Flowers fairly free, well posed; perianth $2\frac{1}{2}$ inches diameter, segments flat, white; corona $\frac{1}{2}$ inch deep, funnel shaped, orange, edged bright orange-red, fades. Bulbs small, of medium increase. April 6 to May 1. Raised by Sir C. H. Cave. Lulworth \times Horace.

ZANZIBAR (Barr).—Foliage drooping at tips. Stem 15 inches. Flower deflexed; perianth $3\frac{1}{2}$ inches diameter, segments flat, overlapping $\frac{1}{2}$, creamy white; corona $\frac{1}{2}$ inch, funnel shaped, orange with bright orange-red marginal band. Bulb of medium size and increase. April 11 to May 1. Raised by Mrs. Backhouse.

KING'S PRIDE (Barr).—Foliage droops at tips. Stem 18 inches. Flowers rather sparse; perianth $3\frac{1}{2}$ inches diameter, flat, creamy white; corona $\frac{1}{2}$ inch, nearly flat, orange, edged deep orange-red. Bulb small, of medium increase, April 28 to May 15. Raised by Mrs. Backhouse.

CHARTER (Watts).—Foliage drooping at tips, dark grey-green. Stem 15 inches. Flower horizontal, very sparse; perianth $3\frac{1}{2}$ inches diameter, somewhat reflexed, creamy white; corona $\frac{1}{2}$ inch deep, basin shaped, orange, edged bright red. Bulb small, of rather slow increase. April 10 to May 1. Raised by Mrs. Backhouse.

SUSETTE (Barr).—Stem 16 inches. Flowers erect; perianth 3 inches diameter, segments flat, overlapping $\frac{1}{2}$, rather reflexed, white; corona $\frac{1}{2}$ inch, saucer shaped, pale salmon-buff. Bulb narrow, of medium increase. April 6 to May 1. Raised by Mr. Dawson. Lulworth \times Horace.

NYSA (Barr).—Foliage dark blue-green. Stem 16 inches. Flowers droop at neck, shy flowering; perianth $3\frac{1}{2}$ inches diameter, segments flat, overlapping $\frac{1}{2}$, somewhat reflexed, rather pointed, white; corona $\frac{1}{2}$ inch deep, saucer shaped, pale orange suffused reddish buff. Bulb narrow, of slow increase. April 6 to April 28. Raised by Mr. Dawson. Lulworth \times Horace.

FIRETAIL (Richardson).—Stem 18 inches. Flower well posed, but very shy flowering; perianth 3 inches diameter, segments overlapping $\frac{1}{2}$, margins incurved, reflexed, creamy white; corona $\frac{1}{2}$ inch deep, funnel shaped, orange at base, brick red at mouth, fading. Bulb small. April 16 to May 5. Raised by Mr. E. M. Crosfield.

RIBAND (Watts).—Foliage drooping at tips. Stem 17 inches. Flowers inclined to droop at neck, free; perianth $3\frac{1}{2}$ inches diameter, segments overlapping at base, margins slightly recurved, somewhat reflexed, pale creamy white; corona $\frac{1}{2}$ inch deep, funnel shaped, pale orange with bright orange-red edge. Bulb small, of medium increase. April 14 to May 3. Raised by Mrs. Backhouse.

CLASS 4A.

Pale or white varieties with corona shorter than perianth but over one-third its length.

AWARDS.

Irish Queen, A.M. (g.) April 22, 1927. Raised by Mr. G. L. Wilson, sent by Mr. Watts.

Duncan, A.M. (g., m.) April 8, 1927. Raised and sent by Mr. P. D. Williams.

Norah Pearson, H.C. (g.) April 22, 1927. Raised and sent by Mr. Pearson.

Tunis, C. (g.) April 8, 1927. Raised and sent by Mr. P. D. Williams.

Vega, C. (g.) April 8, 1927. Raised and sent by Mr. Pearson.

ARTHEN (Watts).—Stem 17 inches. Flowers somewhat drooping, free; perianth $3\frac{1}{2}$ inches diameter, segments flat, overlapping at base, creamy white; corona $\frac{1}{2}$ inch deep, funnel shaped, creamy white with pale creamy buff at mouth. Bulb small, of free increase. March 28 to April 28. Raised by sender.

HERA (Barr).—Stem 18 inches. Flowers drooping, rather sparse; perianth 3 inches diameter, flat, segments overlapping $\frac{1}{2}$, creamy white; corona $\frac{1}{2}$ inch

deep, funnel shaped, creamy white with creamy buff mouth. Bulb small, of rather slow increase. April 6 to April 28. Raised by Messrs. de Graaff.

AVICE (Bliss).—Foliage dull grey-green. Stem 16 inches. Flowers well held, sparse; perianth $4\frac{1}{2}$ inches diameter, segments overlapping only at base, flat, bright creamy white; corona $1\frac{1}{2}$ inch deep, funnel shaped, bright golden yellow. Bulb large, slow of increase. March 3 to April 6. Raised by sender. Duke of Bedford \times Glory of Nordwyk.

MAGNOLIA (Seymour Cobley).—Stem 17 inches. Flowers well posed, sparse; perianth $4\frac{1}{2}$ inches diameter, segments flat, overlapping $\frac{1}{2}$, ivory; corona $1\frac{1}{2}$ inch deep, tubular with expanding mouth, whitish cream. Bulb of medium size and increase. March 31 to April 19. Raised by The Brodie of Brodie.

WHITE PEARL (Barr).—Foliage dark grey-green. Stem 14 inches. Flowers well posed, sparse; perianth 4 inches diameter, overlapping $\frac{1}{2}$, flat, pale creamy white; corona $\frac{1}{2}$ inch deep, tubular with slightly expanded mouth, pale creamy white. Bulb of medium size and slow increase. April 9 to May 2. Raised by Mr. Copeland.

KILLARNEY (Cartwright & Goodwin).—Foliage spreading. Stem 17 inches. Flower drooping at neck, free; perianth $3\frac{1}{2}$ inches diameter, segments somewhat inflexed, overlapping $\frac{1}{2}$, pale creamy white; corona $1\frac{1}{2}$ inch deep with expanded mouth, pale creamy sulphur, rapidly fading. Bulb small, of rapid increase. March 31 to April 19. Raised by Mr. G. L. Wilson.

CALM (Chapman).—Rather weak, with somewhat spreading foliage. Stem 16 inches, drooping. Perianth $3\frac{1}{2}$ inches diameter, segments overlapping $\frac{1}{2}$, with margins slightly incurving, creamy white; corona $1\frac{3}{8}$ inch deep, tubular with expanded mouth, pale sulphur. Bulb small, of slow increase. April 15 to May 4. Raised by sender.

HAREBELL (P. D. Williams).—Foliage very spreading. Stem 16 inches, drooping. Flowers free; perianth 4 inches diameter, inflexed, segments with recurving margins, creamy white; corona $1\frac{1}{2}$ inch deep, tubular, with expanded mouth, pale sulphur. Bulb of medium size and free increase. March 24 to April 18. Raised by sender.

MIRIAM (P. D. Williams).—Stem 15 inches, with well held flowers; perianth $3\frac{1}{2}$ inches diameter, segments flat, somewhat inflexed, overlapping $\frac{1}{2}$, pale, creamy white; corona $1\frac{1}{2}$ inch deep, tubular, scarcely expanded at mouth, pale sulphur. Bulb small, of fairly free increase. April 6 to May 1. Raised by sender.

IRISH QUEEN (Watts), A.M. (g.).—Very vigorous. Stems 16 inches. Flowers well posed, free; perianth 4 inches diameter, segments flat, overlapping $\frac{1}{2}$ of their length, pale creamy white; corona $1\frac{1}{2}$ inch deep, tubular with expanding mouth, pale creamy white. Bulb large and of free increase. April 6 to April 28.

COCKATRICE (Cranfield).—Foliage rather spreading. Stem 14 inches. Flowers starry, fairly free; perianth $3\frac{1}{2}$ inches diameter, segments overlapping at base and somewhat reflexed, creamy white; corona $1\frac{1}{2}$ inch deep, funnel shaped, pale cream with margin a shade deeper. Bulb small, of free increase. April 1 to April 28. Raised by Rev. G. Engleheart.

ALBAN (Cranfield).—Foliage rather spreading. Stem 16 inches. Flowers drooping, not very free; perianth 4 inches diameter, segments overlapping $\frac{1}{2}$, somewhat inflexed, pale creamy white; corona $1\frac{1}{2}$ inch deep, tubular with wide mouth, pale creamy white. Bulb small, of free increase. April 6 to April 28. Raised by Rev. G. Engleheart.

SANCTITY (Pearson).—Foliage very spreading. Stem 15 inches. Flowers drooping, fairly free; perianth 4 inches diameter, segments overlapping at base, somewhat inflexed, pale creamy white; corona $1\frac{1}{2}$ inch deep, tubular with expanded mouth, pale creamy white. Bulb small, of free increase. March 31 to April 21. Raised by Mr. G. L. Wilson.

DUNCAN (P. D. Williams), A.M. (g., m.).—Foliage rather spreading. Stem 20 inches. Flowers well posed, free; perianth $3\frac{1}{2}$ inches diameter, segments overlapping at base, slightly inflexed, ivory; corona $1\frac{1}{2}$ inch deep, funnel shaped, sulphur. Bulb of medium size and free increase. March 8 to April 12.

GYRFALCON (P. D. Williams).—Very vigorous. Stem 17 inches. Flowers well posed, fairly free; perianth 4 inches diameter, segments flat, overlapping $\frac{1}{2}$, creamy white; corona $1\frac{1}{2}$ inch deep, tubular with much frilled mouth, sulphur tipped white. Bulb of medium size, fairly free of increase. March 29 to April 16. Raised by Mr. E. M. Crossfield.

TUNIS (P. D. Williams), G. (g.).—Stem 18 inches. Flower well posed; perianth $4\frac{1}{2}$ inches diameter, segments with slightly recurving margins, inflexed, overlapping $\frac{1}{2}$, creamy white; corona $1\frac{1}{2}$ inch deep, tubular with expanding mouth, pale sulphur, edged pale amber. Bulb of medium size and increase. March 12 to April 14. Paler and larger than 'Duncan.'

CYBELLE (Barr).—Foliage spreading, dark grey. Stem 14 inches. Flowers fairly free, drooping at neck; perianth $3\frac{1}{2}$ inches diameter, segments overlapping $\frac{1}{2}$, inflexed, creamy white; corona 1 inch deep, tubular, slightly expanded at mouth, sulphury cream, edged white. Bulb rather small, of rapid increase. April 6 to April 28. Raised by sender.

CAPELLA (Pearson).—Stem 15 inches. Flowers drooping, produced freely; perianth 3 inches, somewhat inflexed, segments overlapping $\frac{1}{2}$, creamy white; corona $1\frac{1}{2}$ inch deep, tubular, expanded and flat at mouth, sulphur. March 24 to April 10. Bulb small, of rapid increase. Raised by sender.

IRISH PEARL (G. L. Wilson).—Stem 16 inches. Flower somewhat drooping; perianth $3\frac{1}{2}$ inches diameter, segments flat, overlapping $\frac{1}{2}$, creamy white; corona $1\frac{1}{2}$ inch deep, tubular, with expanding mouth, sulphur-cream. Bulb small. March 28 to April 13. Raised by sender.

LOWDHAM BEAUTY (Pearson).—Stem 18 inches. Flower drooping, free; perianth 4 inches diameter, segments somewhat inflexed, recurving at margin, creamy white; corona $1\frac{1}{2}$ inch deep, tubular with expanding mouth, deep creamy amber, fading with age. Colour apt to be streaky. Bulb of medium size and rapid increase. March 28 to April 14. Raised by sender. Minnie Hume \times Mme. de Graaff.

VEGA (Pearson), G. (g.).—Stem 18 inches. Flowers rather drooping, free; perianth $3\frac{1}{2}$ inches diameter, segments rather pointed, overlapping $\frac{1}{2}$, creamy white; corona $1\frac{1}{2}$ inch deep, tubular with expanding mouth, deep cream, fading. Bulb of medium size and rapid increase. Minnie Hume \times Mme. de Graaff.

STABILITY (G. L. Wilson).—Stem 16 inches. Flowers drooping slightly, sparse; perianth $4\frac{1}{2}$ inches diameter, segments rather pointed and inflexed, overlapping $\frac{1}{2}$, creamy white; corona $1\frac{1}{2}$ inch, funnel shaped, pale sulphur with whitish margin. Bulb small medium, very slow of increase. April 14 to May 3. Raised by sender.

MRS. FRANKLIN (Pearson).—Stem 16 inches. Flowers well held, free; perianth 4 inches diameter, segments flat, overlapping $\frac{1}{2}$, pale creamy white; corona $1\frac{1}{2}$ inch deep, funnel shaped, pale sulphur. Bulb rather small, very free of increase. April 1 to April 26. Raised by sender.

GIRDLE (Watts).—Stem 16 inches. Flowers slightly drooping, sparse; perianth $3\frac{1}{2}$ inches diameter, segments flat, overlapping $\frac{1}{2}$, creamy white; corona $1\frac{1}{2}$ inch deep, tubular with expanding mouth, creamy white. Bulb small, of fairly free increase. April 1 to April 19. Raised by sender.

NORAH PEARSON (Pearson), H.C. (g.).—Foliage rather spreading. Stem 16 inches. Flowers drooping, free; perianth $3\frac{1}{2}$ inches diameter, segments rather pointed, overlapping $\frac{1}{2}$, white with sulphur flush at base; corona $1\frac{1}{2}$ inch deep, nearly straight, bright sulphur. Bulb small, of free increase. April 6 to April 28. Minnie Hume \times Mme. de Graaff.

LOUISE L. LINTON (Pearson).—Not vigorous. Foliage rather spreading. Stem 16 inches. Flowers well held; perianth $3\frac{1}{2}$ inches diameter, segments overlapping $\frac{1}{2}$, rather pointed, pale creamy white with sulphur flush at base; corona $1\frac{1}{2}$ inch, nearly straight, bright sulphur buff. March 31 to April 18. Raised by sender. Minnie Hume \times Mme. de Graaff.

THORDIS (Pearson).—Habit of last. Perianth $3\frac{1}{2}$ inches diameter, creamy white; corona $1\frac{1}{2}$ inch deep, tubular with expanding mouth, deep cream. April 5 to May 2. Raised by sender.

CLASS 4B.

Like 4A but corona less than one-third of perianth.

AWARD.

St. Ilario, H.C. (g.) April 22, 1927. Raised by Mr. Copeland and sent by Mr. Pearson.

IDRIS (Watts).—Stem 18 inches. Flowers fairly free, semi-drooping; perianth $2\frac{1}{2}$ inches diameter, segments flat, overlapping $\frac{1}{2}$, white with sulphur base; corona $\frac{3}{4}$ inch, funnel shaped, bright lemon yellow. Bulb small, of medium increase. April 12 to May 1. Raised by sender.

RIVULET (Cranfield).—Stem 24 inches. Flowers well posed, sparse; perianth $3\frac{1}{2}$ inches diameter, segments flat, overlapping, toothed, white; corona $\frac{1}{2}$ inch deep, cup shaped, white. Bulb small, of medium increase. April 30 to May 18. Raised by Rev. G. Engleheart.

COLWYN (Watts).—Weak. Stem 14 inches. Flowers drooping, sparse; perianth $3\frac{1}{2}$ inches diameter, creamy white; corona $\frac{3}{4}$ inch deep, funnel shaped, very pale creamy white. March 24 to April 12. Raised by sender.

ST. ILARIO (Pearson), H.C. (g.).—Stem 16 inches. Foliage rather crowded. Flowers well posed, free; perianth $3\frac{1}{2}$ inches diameter, segments with a fold in middle, overlapping $\frac{1}{2}$, creamy white; corona $\frac{1}{2}$ inch deep, cup shaped, sulphur, faintly and irregularly edged orange. Bulb small, of rapid increase. April 12 to May 3.

ARION (Barr).—Stem 14 inches. Flowers somewhat drooping, fairly free; perianth $3\frac{1}{2}$ inches diameter, segments somewhat inflexed, overlapping $\frac{1}{2}$, pale creamy white; corona $\frac{3}{4}$ inch deep, funnel shaped, very pale creamy sulphur. Bulb rather small, of rather slow increase. April 1 to April 28. Raised by Mr. de Graaff.

CLASS 5.

Triandrus hybrids.

AWARDS.

Beryl, A.M. (r., g.) April 8, 1927. Raised and sent by Mr. P. D. Williams.

Venetia, H.C. (r., g.) April 22, 1927. Raised by Mrs. Backhouse, sent by Mr. Cranfield.

BERYL (P. D. Williams), A.M. (r, g).—Foliage channelled, bright blue-grey. Stem 16 inches. Flowers somewhat drooping; Perianth 3 inches diameter, segments much reflexed, margins incurved, primrose; corona $\frac{3}{4}$ inch deep, funnel shaped, pale orange with deep orange mouth. Bulb small, of slow increase. March 15 to April 11. Cyclamineus \times poeticus \varnothing .

CASTOR (England).—Foliage flat. Stem 15 inches. Flowers drooping, sparse; perianth $3\frac{1}{2}$ inches diameter, flat, creamy white; corona $1\frac{1}{2}$ inch deep, tubular with expanding mouth, pale creamy white. Bulb small. April 23 to May 16. Raised by sender. Weardale Perfection \times triandrus albus.

SNOWBIRD (Barr).—Foliage flat. Stem 15 inches. Flowers in pairs, drooping, sparse; perianth 3 inches diameter, flat, white; corona 1 inch deep, funnel shaped, pale creamy white. Bulb small. April 6 to May 5. Raised by Mrs. Backhouse.

VENETIA (Cranfield), H.C. (r., g.).—Foliage flat. Stem 15 inches. Flowers somewhat drooping, free, white; perianth 3 inches diameter, segments flat; corona $\frac{3}{4}$ inch deep, funnel shaped. Bulb small, of free increase. April 10 to May 6.

ALCYONE (Bliss).—Foliage flat. Stem 12 inches, drooping. Flowers sulphur, sparse; perianth 4 inches diameter, segments flat; corona $1\frac{1}{2}$ inch deep, straight. Bulb small, of slow increase. April 6 to May 4. Raised by sender. Weardale Perfection \times calathinus.

CLASS 6.

Cyclamineus hybrids.

GOLDEN CYCLE (England).—Rather delicate. Stem 12 inches. Flowers well poised; perianth $3\frac{1}{2}$ inches diameter, reflexed, segments rather pointed, buttercup yellow; corona $1\frac{1}{2}$ inch deep, tubular with slightly frilled and expanded mouth, deep buttercup-yellow. April 5 to May 2. Raised by Mr. Batson.

ORANGE GLORY (Barr).—Taller than last, with bright orange corona, otherwise like. Raised by Mr. de Graaff. Cyclamineus \times Yellow Trumpet.

BIJOU (Chapman).—Not vigorous. Stem 11 inches. Flowers somewhat drooping; perianth 3 inches diameter, with deep cream reflexed segments; corona $\frac{1}{2}$ inch deep, cup shaped, bright pale orange. Bulbs very small. March 11 to April 9. Raised by sender.

CLASS 7.

Jonquilla hybrids.

SWEET NANCY (Barr).—Stem 16 inches. Perianth 3 inches diameter, flat, deep cream with sulphur base; corona $\frac{3}{4}$ inch, funnel shaped, pale buttercup yellow. April 2 to April 27. Raised by sender.

GOLDEN BOWL (Cranfield).—Stem 17 inches. Perianth 3 inches diameter, flat, deep buttercup yellow with white tips; corona 1 inch deep, widely tubular, with slightly expanded mouth, bright deep buttercup-yellow. April 2 to April 27. Raised by Rev. G. Engleheart. Bulb of medium size and increase.

SOLLERET (Cranfield).—Stem 17 inches. Perianth $3\frac{1}{2}$ inches diameter, deep yellow; corona like last, bright buttercup-yellow. April 1 to April 12. Raised by Rev. G. Engleheart.

SANDA (Barr).—Stem 18 inches. Perianth $3\frac{1}{2}$ inches diameter, twisted with recurved margins, buttercup-yellow; corona $1\frac{1}{2}$ inch deep, broad crenate at margin, bright buttercup-yellow. Bulb small, of fair increase. April 6 to May 4. Raised by Mr. de Graaff.

ORANGE QUEEN (Barr).—Stem 16 inches. Flowers mainly in threes; perianth 2 inches diameter, flat, bright orange; corona $\frac{1}{2}$ inch deep, funnel shaped, deeper orange. March 19 to May 13.

CLASS 8.

Tazetta hybrids.

AWARDS.

Chineta, H.C. (g., m.) April 22, 1927. Raised by Mr. Chapman, sent by Mr. L. de Rothschild.

Glorious, H.C. (g., m.) April 8, 1927. Raised by Mr. J. C. Williams, sent by Mr. I. L. Richardson.

CHINETA (Rothschild), H.C. (g., m.).—Foliage spreading. Stems 24 inches, erect. Flowers in pairs or threes, sweet scented, free; perianth $2\frac{1}{2}$ inches diameter, segments somewhat reflexed with slightly incurved margins, creamy sulphur; corona nearly flat, orange, edged deep red. Bulb rather large, of fairly free increase. March 31 to April 24.

GLORIOUS (Richardson), H.C. (g., m.).—Foliage rather spreading and drooping. Stem 18 inches. Flowers in pairs or threes; perianth $2\frac{1}{2}$ inches diameter, segments overlapping $\frac{1}{2}$, satiny creamy white, tinged amber at base; corona $\frac{1}{2}$ inch deep, funnel shaped, orange-scarlet, fading at edge. Bulb of medium size and increase. April 1 to April 14.

CLASS 9.

Politicus varieties.

NIMBUS (Cranfield).—Not vigorous. Foliage spreading. Stem 15 inches. Perianth $2\frac{1}{2}$ inches diameter, segments overlapping $\frac{1}{2}$, margins incurving, white; corona $\frac{1}{2}$ inch deep, dull orange-red. Bulb small, of medium increase. April 28 to May 20. Raised by Rev. G. Engleheart.

VISOR (Cranfield).—Stem 16 inches. Flowers sparse; perianth $2\frac{1}{2}$ inches, white, base lemon; corona slightly ribbed, lemon, edged bright red. Bulb small, of slow increase. May 1 to May 25. Raised by Rev. G. Engleheart.

EVADNE (Watts).—Foliage with drooping tips. Stem 18 inches. Flowers rather sparse; perianth $3\frac{1}{2}$ inches, segments flat, overlapping $\frac{1}{2}$, slightly reflexed, white; corona $\frac{1}{2}$ inch deep, saucer shaped, orange with bright red edge. Bulb large, of medium increase. April 8 to May 1. Raised by Mrs. Backhouse.

OPERA (Cranfield).—Stem 16 inches. Flowers round, well poised; perianth $2\frac{1}{2}$ inches, segments overlapping $\frac{1}{2}$, white with cream base; corona $\frac{1}{2}$ inch, saucer shaped, orange, finely serrated at orange red edge. Bulb small, of medium increase. April 19 to May 14. Raised by Rev. G. Engleheart.

SARCHEDON (Barr).—Stem 16 inches. Flowers free; perianth $3\frac{1}{2}$ inches diameter, segments overlapping $\frac{1}{2}$, white with sulphur base; corona $\frac{1}{2}$ inch deep, nearly flat, orange with broad serrated deep red edge. Bulb rather large, of fairly free increase. April 6 to May 5. Raised by Rev. G. Engleheart.

ILIAD (Barr).—Weak. Foliage rather spreading and drooping. Flowers sparse; perianth 3 inches diameter, somewhat reflexed, white; corona flatter than in 'Sarchedon' but of same colour. April 30 to May 21. Raised by Rev. G. Engleheart.

PRELUDE (Seymour Cobley).—Foliage dark blue. Stem 17 inches. Flowers sparse; perianth 3 inches diameter, overlapping $\frac{1}{2}$, white; corona flat, saucer shaped, lemon, edged bright red. Bulb of medium size and increase. April 6 to May 3. Raised by Rev. G. Engleheart.

FRANCIS THOMPSON (Seymour Cobley).—Flower rather larger than last with a flat sulphur corona with a serrated bright red edge. Bulbs small. April 6 to May 3. Raised by Rev. G. Engleheart.

CURFEW (Cranfield).—Much like last but perianth somewhat reflexed. April 6 to April 28. Raised by Rev. G. Engleheart.

ANTARCTIC (Cranfield).—Too weak to describe.

SYMPOSIUM (Cranfield).—Stem 14–15 inches. Flowers well held; perianth $3\frac{1}{2}$ inches diameter, segments overlapping $\frac{1}{2}$, reflexed, white; corona flat, $\frac{1}{2}$ inch wide, sulphur, narrowly edged bright red. Bulb small, of medium increase. April 8 to May 3. Raised by Rev. G. Engleheart.

CLASS 10.

Double varieties.

AWARD.

Cheerfulness, H.C. (g.) April 22, 1926. Sent by Messrs. Vanderschoot.

CHEERFULNESS (Vanderschoot), H.C. (g.).—Stem 17 inches. Flowers freely produced in twos or threes, double; perianth $2\frac{1}{4}$ inches, flat, white; corona true deep yellow and white, about $\frac{1}{4}$ inch deep. Bulb rather small, of rapid increase. April 6 to May 4.

ARGENT (Pearson).—Stem 17 inches. Flowers somewhat drooping, double; perianth $3\frac{1}{2}$ inches diameter, creamy white; corona 1 inch deep, deep buttercup yellow. Bulb small. March 30 to April 20. Raised by Rev. G. Engleheart.

FIRENZE (Barr).—Stem 17 inches. Flowers double, $3\frac{1}{2}$ inches diameter, cream and deep sulphur yellow. Bulb rather small, of medium increase. March 31 to April 21. Raised by Mr. Copeland.

DOUBLET (Watts).—Foliage bright green. Stem 15 inches. Flowers $2\frac{1}{2}$ inches diameter, creamy white and pale yellow. Bulb rather small. April 28 to May 16. Raised by Mrs. Backhouse.

JOYFUL (Watts).—Stem 17 inches. Flowers double, drooping; perianth $4\frac{1}{2}$ inches across, deep cream; corona $1\frac{1}{4}$ inch deep, cylindrical, deep sulphur with 4 pale cream inner segments. Bulb of medium size and slow increase. April 6 to April 27. Raised by sender.

BEET (TURNIP AND INTERMEDIATE VARIETIES) AT WISLEY, 1927.

A TRIAL of Garden Beet was arranged at Wisley in 1927. The following is an account of the round and intermediate types included in that trial, the report on the long varieties being reserved for future treatment.

The seed of all the varieties was sown on May 12 and the plants were thinned to 9 inches apart in the rows on June 22.

Good growth was made by most varieties and the final judging took place on September 9, when awards as set out below were recommended.

Of the fifty-three stocks grown sixteen were of intermediate, thirty-seven of round types.

AWARDS, DESCRIPTIONS AND NOTES.

Round Varieties.

AWARDS.

Detroit Dark Red Re-selected, H.C. September 9, 1927. Sent by Messrs. Zwaan & van der Molen, Voorburg, The Hague, Holland.

Flat Egyptian, H.C. September 9, 1927. Sent by Messrs. Zwaan & de Wiljes, Scheemda, Holland.

Early Model Globe, C. September 9, 1927. Sent by Messrs. Nutting, Southwark Street, London, S.E.

Egyptian Flat, C. September 9, 1927. Sent by Messrs. Zwaan & van der Molen.

Egyptian Turnip-rooted, C. September 9, 1927. Sent by Messrs. Hurst, Houndsditch, London, E.

Foliage greenish-bronze.

CRIMSON GLOBE (Speed, Morris).—See JOURNAL R.H.S., 48, p. 69. Stocks contained coarse roots.

CRIMSON GLOBE O.H. 5 (Wheelers).—Of 'Crimson Globe' type but with smaller top and roots. A good even stock.

CRIMSON GLOBE SELECTED (Wheelers).—Of 'Crimson Globe' type. Stock contained many green-foliaged plants.

EARLY RED GLOBE (Barr).—Of 'Crimson Globe' type. A mixed stock.

DETROIT (Zwaan & de Wiljes).—See JOURNAL R.H.S., 48, p. 69. Variable in foliage. An irregular stock.

DETROIT DARK RED RE-SELECTED (Zwaan & van der Molen), H.C.—Foliage large; roots globular with tapering base, dark blood-red, zones not distinct. A good even stock.

GLOBE (Dobbie).—Described JOURNAL R.H.S., 48, p. 69.

ECLIPSE (Hurst).—Described JOURNAL R.H.S., 48, p. 69. A very variable stock both as regards the foliage and the colour of the flesh.

RELIANCE GLOBE (Webb).—Of 'Eclipse' type; regular.

PERFECT MODEL GLOBE (Kelway).—Of 'Eclipse' type, but the roots are somewhat flatter. A good even stock.

EARLY MODEL RED GLOBE (Watkins & Simpson).—A dwarfier and more compact variety than 'Eclipse,' with roots almost globular and little foliage.

EARLY MODEL GLOBE (Nutting), C.—Foliage medium to large; roots almost round, wider than deep; flesh dark red-purple with indistinct zones. Stock requires further selection.

EARLY MODEL GLOBE (W. H. Simpson).—Characters as last but somewhat mixed.

MODEL GLOBE (Cullen).—Of 'Early Model Globe' type. An irregular stock.
DEEP BLOOD RED GLOBE (Hurst).—Of 'Early Model Globe' type. Stock contained flat-round rooted plants.

Foliage bronze.

THE COOPER-TABER (Cooper-Taber).—Described JOURNAL R.H.S., 48, p. 70.
CRIMSON BALL (Carter).—A mixed stock.

EXCELSIOR (Barr).—A mixed stock.

EARLY WONDER (Zwaan & van der Molen, Zwaan & de Wiljes).—Foliage large; roots wider than deep; flesh dark red-purple, zones somewhat distinct. Stocks require further selection.

DEWING'S BLOOD RED (Barr).—A mixed stock.

ROUND DARK-LEAVED (Carter).—Foliage large; roots wider than deep; 35 per cent. above soil; flesh reddish-purple, zoned white. Stock contained roots with brick-red flesh.

SUNNYBROOK (Burpee).—A mixed stock.

WITHAM FIREBALL (Cooper-Taber).—Foliage large; roots almost globular, irregular in shape, 50 per cent. above soil; flesh bright brick-red, much zoned white.

ROUND DARK RED, BLACK LEAF (Zwaan & van der Molen).—Foliage large; roots almost globular, regular, 20 per cent. above soil; flesh reddish-purple, distinctly zoned white. Brick-red fleshed rogues.

LITTLE GEM (Johnson).—Foliage medium; roots almost globular, regular, 40 per cent. above soil; flesh dark reddish-purple, somewhat zoned. Requires further selection.

TURNIP-ROOTED (Heinemann).—Foliage large; roots almost globular, 30 per cent. above soil; flesh dark reddish-purple, somewhat zoned. Stock contained green-foliaged rogues.

BLOOD TURNIP IMPROVED (Burpee).—Foliage very large; roots coarse, globular, irregular; flesh reddish-purple, distinctly zoned whitish.

ROUND-FORMED (Zg. Nunhem).—Foliage medium; roots flat-round to round, regular, 30 per cent. above soil; flesh blood red. A true stock.

CROSBY'S EGYPTIAN (Barr).—Rounder than the true 'Egyptian' variety, but as early. A mixed stock.

EGYPTIAN (Olsen).—Like 'Crosby's Egyptian.' A variable stock.

FLAT EGYPTIAN (Zwaan & de Wiljes, H.C.).—Foliage small; roots flat round, 70 per cent. above soil; flesh blood red. A good even stock.

EGYPTIAN FLAT (Zwaan & van der Molen, C.).—Like 'Flat Egyptian,' but a less good stock.

EGYPTIAN TURNIP-ROOTED (Hurst, C.).—Like 'Flat Egyptian.'

EGYPTIAN TURNIP-ROOTED (Speed).—Like 'Flat Egyptian.' A variable stock as regards height and colour of flesh.

EGYPTIAN TURNIP-ROOTED RE-SELECTED (Carter).—Like 'Flat Egyptian.'

Intermediate varieties

AWARDS.

Feltham Intermediate, A.M. September 9, 1927. Raised and sent by Messrs. Watkins & Simpson, Drury Lane, Covent Garden, W.C. 2. [A.M. 1922 (Watkins & Simpson).]

Intermediate, A.M. September 9, 1927. Sent by Messrs. Webb, Wordsley, Stourbridge.

Intermediate, H.C. September 9, 1927. Sent by Messrs. Cullen, Witham, Essex.

Nonpareil, H.C. September 9, 1927. Sent by Messrs. Barr, King Street, Covent Garden, W.C. 2.

Obelisk, H.C. September 9, 1927. Sent by Messrs. Speed, Evesham, Nutting.

Excelsior, H.C. September 9, 1927. Raised and sent by Messrs. J. L. Cucas, Ormskirk, Lancs.

Intermediate, C. September 9, 1927. Sent by Messrs. Carter, Raynes Park, S.W.

FELTHAM INTERMEDIATE (Watkins & Simpson), A.M.—Plant medium to large; roots 6 × 2 inches, somewhat tapering, dark blood-red, 60 per cent. out of the soil; flesh dark blood-red, zones indistinct. A good, true, even stock.

INTERMEDIATE (Webb), A.M.—Plant large; roots 6 × 2½ inches, somewhat tapering, dark blood-red, 60 per cent. out of the soil; flesh dark blood-red, zones indistinct. A good even stock.

INTERMEDIATE (Cullen), H.C.—Like the last, but not quite so regular.

NONPAREIL (Barr), H.C.—Like 'Intermediate.'

OBELISK (Speed, Nutting), H.C.—Like 'Intermediate.'

INTERMEDIATE (Carter), C.—Like the last but a less regular stock.

INTERMEDIATE (R. Veitch, Hurst).—Variable in shape.

NEW INTERMEDIATE (Barr).—Variable in shape.

EARLY INTERMEDIATE (W. H. Simpson).—Very variable in shape. Contained round and long rogues.

NONPAREIL or OBELISK (Cooper-Taber).—Very variable in colour of foliage and roots.

BARREL SHAPED (Kelway).—Variable in shape.

EXCELSIOR (Clucas), H.C.—Plant small; roots oval shaped, somewhat tapering, dark blood-red, 70 per cent. out of the soil; flesh dark blood-red, zones indistinct. No. 2 selection of this variety did not mature.

BLACK RED BALL (Burpee).—A coarse growing variety of the 'Intermediate' type.

CULINARY PEAS AT WISLEY, 1927.

The varieties of culinary peas grown in 1927 were sent in as suitable for providing late crops.

The following varieties have received awards in previous years, but these were passed over this time as being less good than the best in these trials :

Masterpiece [A.M. 1916 (Sutton)]; Freedom [A.M. 1922 (Hurst)]; Latest of All [A.M. 1917 (Barr)]; Rearguard [A.M. 1917 (Hurst)]; Royal Salute [A.M. 1916 (A. Dickson)]; Market King [A.M. 1916 (Carter)]; Quite Content [A.M. 1916 (Barr, Carter)]; Duke of York [A.M. 1926 (Cooper, Taber)]; Admiral Beatty [A.M. 1926 (several)]; International [A.M. 1916 (Carter)]; Market Gardener [A.M. 1916 (Carter)]; Alderman [A.M. 1926 (Laxton, Johnson)]; Ne Plus Ultra [F.C.C. 1922 (Carter)].

AWARDS, DESCRIPTIONS, AND NOTES.

1½ to 3 feet.

Seeds wrinkled.

AWARD.

Celebrity, C. August 12, 1927. Raised and sent by Messrs. W. W. Johnson, Boston, Lincs.

DAISY (Morse).—Haulm 16 inches, dark grey green; pods single, pointed, straight, dark green, 3 to 4 inches long; peas large, medium green, 7 or 8 in a pod. Crop good. Ready August 3.

DAISY (Johnson).—A taller, 2½ feet, and paler podded strain of the last. Contained small podded plants.

DWARF DEFIANCE (Johnson, Speed).—Described R.H.S. JOURNAL, vol. 52, p. 108. Ready August 5. Messrs. Johnson's stock contained paler podded rogues while that of Messrs. Speed was mixed with blunt, paler podded plants.

THE LINCOLN (Speed, Morse).—Described R.H.S. JOURNAL, vol. 52, p. 111. Ready August 2. Messrs. Speed's stock contained paler podded rogues.

MASTERPIECE (Johnson).—Haulm 3 feet, dark grey green, stout; pods in pairs, stout, straight, dark green, 3½ to 4½ inches long; peas large, dark green, somewhat mealy, 7 or 8 in a pod. Crop good. Ready August 3.

THE VICTOR (Johnson).—Described R.H.S. JOURNAL, vol. 43, p. 511. Ready August 9.

CELEBRITY (Johnson), C.—3 feet; haulm dark green, stout; pods in pairs, stout, pointed, straight, dark green, 3½ to 4½ inches long; peas large, dark green, flavour good, 8 to 10 in a pod. Crop very good. Ready August 7.

STRATAGEM (Speed, Morse).—Described R.H.S. JOURNAL, vol. 43, p. 504. Ready August 6. Messrs. Speed's stock contained tare-leaved rogues and small podded rogues.

RENTPAYER (Johnson, R. Veitch).—A selection of 'Stratagem' type. Stocks contained blunt and paler podded rogues. Ready August 5.

3 to 4½ feet.

Seeds round.

PLENTIFUL (W. G. Holmes).—3½ feet; haulm stout; foliage dark grey-green; pods in pairs, pointed, somewhat curved, dark green, 3½ to 4½ inches long, broad; peas large, dark green, somewhat mealy, 8 to 10 in a pod. Ready August 6. Raised by sender.

3 to 4½ feet.

Seeds wrinkled.

AWARDS.

Glory of Devon, H.C. August 12, 1927. Raised by Messrs. R. Veitch and sent by Messrs. Cooper, Taber, Southwark St., London, S.E. [A.M. 1916 (Barr)].

The 1927, H.C. August 12, 1927. Raised and sent by Messrs. Johnson.

Anticipation Reselected, H.C. August 12, 1927. Raised and sent by Messrs. Carter, Raynes Park, London, S.W.

Union Jack, H.C. August 12, 1927. Raised by Messrs. Hurst and sent by Messrs. Harrison of Leicester, Speed of Evesham, Morse of San Francisco, California, U.S.A.

Chancelot, H.C. August 12, 1927. Sent by Messrs. Dobbie of Edinburgh.

Reliable, C. August 12, 1927. Raised by Messrs. Laxton and sent by Messrs. Harrison.

Danby Stratagem, C. August 12, 1927. Raised and sent by Messrs. Carter [A.M. 1916 (Carter)].

Senator, C. August 12, 1927. Raised by Messrs. Webb and sent by Messrs. Speed, Harrison.

William Richardson, C. August 12, 1927. Raised by Messrs. Backhouse and sent by Messrs. Nutting of Southwark.

Masterpiece, C. August 12, 1927. Sent by Messrs. Webb of Wordsley, Stourbridge.

LIBERTY (W. H. Simpson).—Described R.H.S. JOURNAL, vol. 48, p. 88. Ready August 18.

THE BELL (W. H. Simpson).—Height 3 feet; haulm stout, dark grey-green; pods in pairs, 3 to 4 inches long, broad, straight, dark green; peas large, bright dark green, 7 or 8 in a pod, flavour good. Ready August 2. Stock contained small podded rogues.

VICTORY (Robinson).—3½ feet; haulm stout; foliage dark grey-green; pods mostly in pairs, 3½ to 4½ inches long, broad, pointed, curved, dark green; peas large, dark green, 7 to 9 in a pod, flavour good. Ready August 18. Contained taller and small podded rogues.

GLADSTONE (Johnson, Carter, W. H. Simpson, Nutting, Harrison, Wheelers, R. Veitch, Cullen, W. G. Holmes, Kelway, Speed, Dobbie, Hurst).—Described R.H.S. JOURNAL, vol. 48, p. 519. Ready August 10.

GLADSTONE SELECTED (Webb).—Characters as for 'Gladstone.'

FREEDOM (Hurst, Watkins & Simpson, W. H. Simpson, Kelway).—Described R.H.S. JOURNAL, vol. 48, p. 88. Ready August 8.

DISTINCTION (Webb).—A mixed stock.

BRITISH VICTORY (Kelway).—3½ feet; foliage dark grey-green, somewhat marbled; pods in pairs, blunt, straight, dark green, 3 to 4 inches; peas large, 6 to 8 in a pod. Ready August 16. Raised by sender.

HORSFORD'S MARKET GARDEN (Morse).—3½ feet; foliage dark grey-green; pods in pairs, blunt, straight, pale green, 2½ to 3 inches; peas of medium size, pale green, flavour good, 6 or 7 in a pod. Ready August 3.

RELIABLE (Harrison), C.—3½ feet; haulm stout; foliage dark grey-green; pods mostly single, pointed, straight, dark green, 3 to 4 inches long; peas of medium size, dark green, 7 to 9 in a pod, flavour good. Ready August 12. Crop good.

AUTOCRAT (Watkins & Simpson, Cooper, Taber, Carter, W. H. Simpson, Nutting, Harrison, Wheelers, R. Veitch, Kelway, Barr, Speed, Dobbie, Zwaan & van der Molen, Hurst).—Described R.H.S. JOURNAL, vol. 48, p. 518. Ready August 25.

CAPTAIN CUTTLE (Hurst).—Described R.H.S. JOURNAL, vol. 48, p. 91. Ready August 8. Crop poor.

MICHAELMAS (Carter).—Of 'Autocrat' type. Ready August 25. Contained tall-growing rogues.

LATEST OF ALL (Barr).—Of 'Autocrat' type. Ready August 25.

DANBY STRATAGEM (Carter), C.—Described R.H.S. JOURNAL, vol. 48, p. 504. Ready August 9.

KING OF ALL (Clucas).—3½ feet; haulm stout; foliage dark grey-green; pods single, pointed or blunt, straight, dark green; peas large, dark green, 8 to 10 in a pod. Ready August 20. Crop good.

PERFECTION (Barr, Dobbie).—Described R.H.S. JOURNAL, vol. 48, p. 503. Ready August 10.

HAMLET (Daehnfeldt & Jensen).—4 feet; foliage dark grey-green, somewhat marbled; pods mostly single, pointed, straight, dark green, 3 to 3½ inches long; peas of medium size, bright green, 7 or 8 in a pod. Ready August 8.

GLORY OF DEVON (Cooper, Taber), H.C.—Described R.H.S. JOURNAL, vol. 43, p. 508. Ready August 4. A good even stock.

GLORY OF DEVON (Harrison, Zwaan & de Wiljes).—Messrs. Harrison's stock was less good than that of Messrs. Cooper, Taber, while that of Messrs. Zwaan & de Wiljes was of a darker podded form than either.

THE 1927 (Johnson), H.C.—4½ feet; haulm stout, foliage dark grey-green; pods mostly single, pointed, straight, dark green, 3½ to 4½ inches long; peas large, dark green, 8 to 10 in a pod, flavour good. Ready August 10. Crop good.

ANTICIPATION RE-SELECTED (Carter), H.C.—Described R.H.S. JOURNAL, vol. 48, p. 88. Ready August 12.

LATEST GIANT (Carter).—Described R.H.S. JOURNAL, vol. 48, p. 88. Ready August 16.

SENATOR (Speed, Harrison), C.—Described R.H.S. JOURNAL, vol. 43, p. 504. Crops very good. Ready August 5.

UNION JACK (Harrison, Speed, Morse), H.C.—A darker podded form of 'Senator.' Crops very good.

WILLIAM RICHARDSON (Nutting), C.—Described R.H.S. JOURNAL, vol. 48, p. 89. Ready August 12. Crop good.

ENGLISHMAN (Kelway).—3½ feet; foliage dark grey-green, somewhat marbled; pods mostly single, blunt, straight, light green, 3 to 4 inches long; peas of medium size, light green, mealy, 7 to 9 in a pod. Ready August 12. Crop fair.

MASTERPIECE (Webb), C.—4½ feet; haulm stout; foliage dark green; pods mostly single, blunt, straight, dark green, 3 to 3½ inches long; peas of medium size, dark green, 6 or 7 in a pod, flavour good. Ready August 12. Distinct from the variety raised by Messrs. Sutton under this name.

REARGUARD (Hurst).—4½ feet; haulm stout; foliage dark green; pods in pairs, pointed, straight, dark green, 3½ to 4 inches long; peas large, dark green, 7 or 8 in a pod, flavour good. Ready August 16. Crop fair.

BYSTANDER (Watkins & Simpson).—4 feet; foliage dark; pods mostly in pairs, pointed, dark green, somewhat curved; peas large, dark green, 8 to 10 in a pod, flavour fair. Ready August 16. Crop good.

ROYAL SALUTE (Harrison, Speed, Dobbie).—Described R.H.S. JOURNAL, vol. 43, p. 505. Ready August 12. Stocks contained smaller podded rogues.

CHANCELOT (Dobbie), H.C.—Described R.H.S. JOURNAL, vol. 47, p. 85. Ready August 9. Crop good.

REUZEN CHATENAY (Zg. Nunhem).—Described R.H.S. JOURNAL, vol. 52, p. 114. Ready August 2.

SUIKERZOETE (Zg. Nunhem).—4½ feet; foliage dark grey-green; pods mostly in pairs, pointed, light green, somewhat curved, 2½ to 3 inches long; peas of medium size, light green, 5 to 7 in a pod, flavour good. Ready August 3. Crop fair.

Seeds dent.

VERBETERDE CHATENAY (Zg. Nunhem).—Described R.H.S. JOURNAL, vol. 52, p. 114. Ready August 2.

MARKET KING (Carter).—Described R.H.S. JOURNAL, vol. 43, p. 505. Ready August 2.

CHAMPION OF ENGLAND (Olsen).—4 feet; foliage dark green, somewhat mottled; pods mostly single, pointed, medium green, somewhat curved, 2½ to 3 inches long; peas of medium size, dark green, 6 to 8 in a pod, flavour good. Ready August 2.

TELEGRAPH (Johnson).—Described R.H.S. JOURNAL, vol. 43, p. 511. Ready August 4.

DOFFER (Zg. Nunhem).—4½ feet; foliage medium green; pods in pairs, pointed, light green, curved, 3 to 3½ inches long; peas of medium size, light green, somewhat mealy, 7 to 10 in a pod. Ready August 10.

Above 4½ feet in height.

Seeds wrinkled.

LATE DUKE (Carter).—5½ feet; foliage dark grey-green; pods in pairs or single, pointed, dark green, somewhat curved, 3½ to 4½ inches long; peas large, dark green, 8 to 10 in a pod, flavour good. Ready August 9.

REUZENKROMBEK (Zg. Nunhem).—Described R.H.S. JOURNAL, vol. 52, p. 115. Ready August 6.

REUZENDOPFER (Zg. Nunhem).—Described R.H.S. JOURNAL, vol. 52, p. 116. Ready August 6.

JOHN HOWARD (Watkins & Simpson).—5 feet; haulm stout; foliage dark grey-green; pods single, blunt, straight, dark green, 3 to 4 inches long; peas large, dark green, 7 or 8 in a pod, flavour good. Ready August 2.

GOLIATH (Carter).—5 feet; haulm stout; foliage dark grey-green, somewhat marbled; pods mostly in pairs, blunt, straight, dark green, $3\frac{1}{2}$ inches long; peas large, dark green, 6 to 8 in a pod, flavour good. Ready August 3.

QUITE CONTENT (Johnson, Dobbie).—Described R.H.S. JOURNAL, vol. 43, p. 508. Ready August 2.

DUKE OF YORK (Johnson).—Described R.H.S. JOURNAL, vol. 47, p. 84. Ready August 2. A good even stock.

ADMIRAL BEATTY (Harrison, Morse).—Described R.H.S. JOURNAL, vol. 46, p. 388. Ready August 6.

INTERNATIONAL (Carter).—Described R.H.S. JOURNAL, vol. 52, p. 115. Ready August 6. Crop poor.

BATTLESHIP IMPROVED (Carter).—Described R.H.S. JOURNAL, vol. 43, p. 506. Ready August 2.

BATTLESHIP ORIGINAL (Carter).—Near the last, but taller.

MARKET GARDENER (Carter).—Described R.H.S. JOURNAL, vol. 43, p. 507. Ready August 4.

TELEPHONE (Morse).—Described R.H.S. JOURNAL, vol. 43, p. 507. Ready August 6. Crop poor.

ALDERMAN (Johnson, Speed, Morse, Dobbie).—Described R.H.S. JOURNAL, vol. 52, p. 116. Crops good. Ready August 8. Messrs. Speed's and Dobbie's stocks contained small-podded rogues.

CHARNWOOD BOUNTIFUL (Dew).—Of 'Alderman' type. Ready August 6. Crop and stock good.

LORD LEICESTER (Harrison).—Of 'Alderman' type. Ready August 6.

PRINCE EDWARD (Cooper, Taber).—Of 'Alderman' type. Crop good.

V.C. (Johnson, Nutting, Dobbie).—Described R.H.S. JOURNAL, vol. 52, p. 116. Ready August 12. Stocks contained smaller podded plants and there were many "misses" in the pods.

NE PLUS ULTRA (Johnson, Cooper, Taber, Carter, Nutting, Kelway, Dobbie, Zwaan & de Wiljes, Hurst).—Described R.H.S. JOURNAL, vol. 48, p. 91. Ready August 7.

NE PLUS ULTRA SELECTED (Barr).—Like the last.

NE PLUS ULTRA RESELECTED (Carter).—Like 'Ne Plus Ultra.'

GOLDFINDER (Zwaan & van der Molen).—Characters as for 'Ne Plus Ultra.'

BOOK REVIEWS

"WILLIAM BATESON, F.R.S., Naturalist. His Essays and Addresses, together with a Short Account of his Life." By Beatrice Bateson. (Cambridge University Press, 1928.) 21s.

The death of William Bateson was a loss which it is even now difficult to estimate. Those who were interested in the study of heredity felt for the moment as if a sudden halt had been called in the forward march, and, looking around for a new leader, realized more than ever before that a great and stimulating personality had been taken from them.

The present memoir by Mrs. Bateson will be valued by all who knew him personally, as well as by that wider circle to whom he was known only by his writings. The facts of his life are told with a quiet courage which is wholly admirable. His hopes and triumphs, doubts and depressions, and even his very human weaknesses make a picture of the man which has the mellow austerity of an old master.

Bateson first appeared in the horticultural world as the apostle of Mendel, and in those days the new gospel had to fight its way, not against the mere honest doubt with which science rightly views new theories, but through a cloud of scorn and misrepresentation. Into the contest Bateson threw himself with an almost Pauline fervour, sparing none whom he considered were wilfully obstructing the truth.

The analogy may be carried further, for we are told that he first read Mendel's paper on May 8, 1900, in the train when coming to London to lecture to the Fellows of this Society. The new light brought an immediate and permanent conversion, as on that other day on the Damascus road. Bateson, the cautious doubter, had by his own labours arrived at the threshold and Mendel's work was a sudden illumination—as the opening of a door to a lighted room. A few hours later Mendel's experiments were incorporated in the lecture and the facts first made known to an English audience.

Twenty-eight years after, it is difficult for us to throw ourselves back to those days. The work of Mendel has revolutionized the methods of plant breeding and all that this means to horticulture. So little, however, was the importance of this pioneer work realized, that we read with incredulity of the struggles needed to get space and funds for the early experiments.

The offer of £100 a year for three years from a private donor was received as a God-send, and £36 from the Royal Society and £38 from the British Association was all the income that could be counted on.

Putting his small capital into the purchase of Grantchester House, chosen for its garden and accommodation for fowls, the famous experiments were begun.

The running of incubators, planting, and weeding, were matters of personal interest and often of personal work. When affairs called him away his wife stayed in charge, and the holidays had to be spent apart for the same reason. An amusing account is given by the author of the annual visit to the Temple Show :

"During these years, from early spring to late autumn we never left home together, except on 'Flower Show' day. Then we rose early, 'did' the incubators, and bicycled to the station for an 8 o'clock morning train. We had time to see the Royal Academy Summer Show and a Bond Street Gallery or two before the Flower Show opened. We made a complete tour of that, noting any novelty or variety that was new to him, and then away to hunt up a few references in one Library or another, or to make a hurried inspection of Christie's, Sotheby's, Robinson and Fisher's, or Foster's sale rooms ; a few moments in the Temple Church, or a visit to confirm some impression of a picture in the National Gallery, and away back to the Flower Show, by this time less crowded, so that the men in charge of the exhibits were freer to answer the questions suggested to him by the morning visit. We tried once or twice to finish with a theatre, but the midnight ride back to Grantchester from Cambridge station—the eggs still to be turned, the lamps adjusted—taught us to be content without this extra pleasure."

In these days of liberal grants for research it is well to remember these things and to note that some progress has been made and some vision is now exercised in high quarters. But the work went on and its results are now scientific history, and who shall say that its ardours and endurances were not well repaid ? How revealing is the account of the discovery of the problem of the Silky fowls. Mrs. Bateson, then away from home with the children, received the following telegram on January 9, 1908 (the telegram was sent off at 7.29 A.M.) :

"Silky problem almost certainly solved. Solution very exciting.
"Bateson."

The following letter came shortly after :

"MERTON HOUSE, GRANTCHESTER, CAMBRIDGE,
9. 1. 08. 6.45 A.M.

"I have almost certainly solved the Silky problem, and a great part of sex with it !

"Last night I began to try to think over Sex for my 'book.' I started by reading what I had written for *Progressus*. Coming on Doncaster's moth story I felt it unsatisfactory, and then I tried working it with the hypothesis that ♀ are all heterozygous in sex, viz. ♀ ♂, ♂ being homozygous, ♂ ♂.

"To my surprise I found it went quite smoothly and saves a lot of assumption. So then I tried the Silkies with this clue—the exact contrary to what I had always assumed before Christmas. I stuck to it all evening, and by dodging it about in various ways before midnight I had got a scheme which *approximately fits all our facts*.

It is so simple and on the whole fits so well I feel sure it can't be far out.

"I wrote it out for Punnett and went to bed at 1 A.M., but only slept a little. I got up at 5.45 as I could not stay in bed, and have been touching up my letter to Punnett. When it gets light I shall run in and wire you.

"I feel rather like I did on the morning of January 11, 1889 (after his engagement to his wife)—very pleased with myself—only perhaps a little more *certain* I am on the right track. Also the risks incurred are not so great, because hypotheses can be amended—wives less easily.

"W. B."

But while the present had its live and varied interests, Bateson's eye was ever away to the horizons. More than anyone he saw the field before Mendelian research, and his small space at Grantchester, already filled to repletion, could not satisfy him. When the generous gift of Wisley came to this Society he was early in the field to claim it for experimental uses, but this was not to be, and Cambridge, his rather grudging Alma Mater, was to be his home for some years.

In 1910, however, his great opportunity came, Mr. John Innes having left a large sum for the furthering of horticulture, and so it was to this haven at Merton that Bateson came to anchor and found at last scope for his work.

From now he looked more and more to horticulture for experimental material, firstly from its rapidity of reproduction and later for the study of somatic variation.

Many readers of this JOURNAL will remember his intense interest in first hearing from Mr. Charles Pearson, at a dinner of the Horticultural Club, the fact that root cuttings of *Bouvardias* produced different coloured flowers from those produced by the shoots. This, with the work of Baur on Chimeras produced by grafting, provided a field for research of which he at once realized the value.

For all such work Merton provided full scope, and the construction of greenhouses and the accumulation of a fine library must have led him near to his heart's desire.

His visits to America, and the warm welcome he received, were a great encouragement, and the new outlook was beneficial to himself. His letters show a very human delight in this side of life, and it is as amusing to see that he shared with many lecturers, a few hours before the event, the awful feeling that he had nothing to say, and then generally the discovery that there was far too much!

Of the lectures given to this Society two are reprinted in this volume, interesting both for their content and historical value. The other essays are not of horticultural interest, but touch various matters of great interest—education, the problems of races, etc., as seen by a naturalist.

But while there is much more to be said of his work, it would be

well to devote a few lines of the remaining space to the man whom Mrs. Bateson allows us to see with such intimacy.

As a boy, a certain aloofness and independence ill fitted him for the standard public school mould, and his early days at Rugby must have been as sore a trial to his parents and tutors as they were to himself.

Throughout life his ready aversion from things which were useless to him was a strong characteristic. To some at times it may have seemed like rudeness, but it was founded on an unwillingness to exchange the conventional small coin of insincerity which social intercourse demands. But how different if one could show him a new fact which had a bearing on his work ! The writer well remembers his joy in seeing for the first time a sectorial chimera of a type unknown to him. With an almost boyish zest he examined the subject fully and minutely, and at the end of a long day returned to have another close inspection.

But behind the outward man was a sensitive being, responding quickly to beauty in any form and with a ready appreciation for the humours of life, a quiet subterranean chuckle told you when you had struck the right note.

The Genetic Society which he founded seems to find no place in Mrs. Bateson's book, but we think it was very near his heart, and the annual visits to breeders and others showed Bateson at his best. To examine new material was an adventure, and his observant eye quickly found anything "of importance for us."

Reference must be made in closing to Bateson's great interest in Art, especially painting and drawing. Catholic indeed it was, ranging from the moderns to the older Chinese artists, but finally settling down to the drawings of the European masters, and there can be few men of science of whom it could be said, as the *Burlington* did of Bateson, that his death was a loss to Art.

The writer is not surprised to read that, on his mother's side, Bateson came of a sea-faring family. There was about him an atmosphere of the sea and great spaces. His blue eyes were those of a sailor and one could picture him on the bridge, looking ahead. But it was to another venture that he was led, and all who voyaged with him will be grateful to Mrs. Bateson for her decision to reveal something of the private life of the captain with whom they were proud to serve.

"Seed Production and Marketing." By Joseph F. Cox and George E. Starr, Research Associate, Michigan State College. (Wiley & Sons, Inc., New York, and Chapman & Hall, London, 1927.) 20s. net.

There is no work in this country so complete as this on seed growing. It extends to 450 pages and contains nearly 200 fine illustrations. A sentence from the preface sets out the scheme of the book: "The successful methods and ideas of a large number of seed growers, plant breeders, wholesale seed dealers and seed retailers, are presented in this pioneer seed book."

The growing and marketing of agricultural seeds takes up the first half of the volume, but the methods and processes described are intensely interesting to growers of garden seeds. It is pointed out that while the modern plant breeder now produces varieties of higher yielding ability and superior market qualities, he is able materially to offset losses from plant diseases, and in certain instances from insects, by the development of resistant strains. In endeavours to raise the latter, seedlings are inoculated with cultures of the diseases and of course non-resistant plants succumb, but if only a very few are resistant an important step forward has been made. An interesting work is also being carried out, and it is being proved that the combination of pure lines of a good strain tends to develop highly superior strains which retain their yielding capacity over a number of years and are not dependent on the "buoying effect" of recent hybridization. There is much food for thought here. The writers add "by recombining selected pure lines, undesirable lines of heredity existent in our common corn varieties are eliminated."

Much work is done in the United States in raising good strains by "county pure bred seed grain associations" which work in conjunction with a National Crop Improvement Association. The Canadian Seed Growers' Association, we are told, have included garden seeds among the crops grown for certification. All this is rather foreign to British ideas, but we know that some of the recent suggestions emanating from our own Ministry of Agriculture are inspired by the work attempted in recent years in Canada and the United States. In Canada the inspection service is controlled by the Department of Agriculture. Whole chapters are devoted to the growing and development of Maize, Wheat, and other cereals. Clovers and Grasses come in for a large share of attention. Cotton seed production is a vitally important chapter and makes interesting reading to one who knows something of what is being done by our own people in India and Egypt.

The growing and marketing of Seed Potatos occupies some twenty pages. We are told that 6 to 8 tons or more of manure applied in fall or early spring before ploughing the land will give excellent results. An Ayrshire, a Lothian, or a Lincolnshire farmer would consider that a "thin" dressing, even if supplemented by 300 or 400 lb. of acid phosphate to the acre. He would want double that quantity at least! The treatment of all Seed Potatos before planting by soaking in a corrosive sublimate solution is recommended. That is not done in Britain, but it might be worth while experimenting with this deadly poison in a small degree. Some of our experimental stations might carry out and report.

The writers are rather wedded to "hill selection," which is discounted now even by Mr. Stuart the well-known Potato authority at Washington.

The second half of the volume under review is devoted to the growing of Brassicas, Solanaceous vegetables—Tomatos especially, Tobacco, garden and canning Peas (a great industry), Beet and Sugar

Beet, Carrot, Parsnip, Celery, Parsley, and other umbelliferous plants, Onion, Leek, Garlic and Shallot, Lettuce, Endive, Chicory, Salsify, Asparagus and Rhubarb, Radish, Cress and Sea Kale. The magnitude of some of these cultures is enormous. The acreage of canning Peas in 1925 was 230,000 with a production of 214,000 tons. Lettuce, Carrots, Beet, Onions, Radishes are grown by the thousand acres for seed alone. Tomatos and Tobacco by hundreds of acres, and so on. All the processes are minutely described and many of them illustrated. The last forty or fifty pages are devoted to a series of interesting tables and recipes for the treatment of various diseases. When one remembers that the climate of the United States is so varied, one ceases to wonder at the magnitude of their seed-growing industry—from semi-tropical Florida and South California in the south to the Canadian border on the north there is room, there is soil, and there is a climate for almost every class of plant.

The volume is well worth a place in every seed-grower's library at home and abroad.

"A Glossary of Botanic Terms: with their Derivation and Accent." By Dr. B. D. Jackson. Ed. 4. xii + 481 pp. (Duckworth, London, 1928.) 15s. net.

A new edition of this indispensable book is welcome, for, botany being a developing study, constant additions of new terms occur and cytological and ecological studies are answerable for a great number of them. They are grouped together as a supplement to the former editions, and occupy pp. 417 to 473. Their selection and definition exhibit the same meticulous care as was expended upon former editions and which have made the work so much valued by all who need to know the meanings of terms used in Botany.

"The Life-force in the Plant World." By E. Hughes-Gibb. xx + 185 pp 8vo. (Routledge, London, 1928.) 5s. net.

This seems to be an endeavour to show that definite laws of growth, etc., exist in plants, imposing certain forms upon them, and that these laws are the same as those which govern the rest of animate and inanimate nature. There is, it is said, a principle of spirality, and a principle of rhythm, and so on. One feels that the authoress is bending particular instances to support hypotheses too much—that to make them support the hypothesis is much more important than to make the hypothesis fit the facts; but some may find interest in the book. As an aid to gardening the book is negligible, of course, but those who have not realized that everything in life does not lie patent to the eye may be introduced to the idea by a perusal of it, and that will be worth while.

"Introductory Science for Botany Students." By K. E. Maris. 8vo. vii + 181 pp. (Murray, London, 1928.) 3s. 6d.

We are glad to see this little book, for it gives just such an introduction to organized knowledge of the environment of plants as is required before the place a plant occupies in the general scheme of things can be realized, and its scope is so well chosen that it does no more. Many are so accustomed to think of botany, physics, chemistry, and the like as definite departments of knowledge which do not trespass upon one another's territory that most of our science teaching fails of its main reason. The use as a guide for elementary instruction of such a book as this would do something to counteract this evil state of things.

"Primulas for Garden and Greenhouse." By E. H. M. Cox and G. C. Taylor. 8vo. 128 pp. (Dulau, London, 1928.) 5s. net.

In view of the great increase, during the last two decades, in the number of Primulas available for cultivation in our gardens—an increase largely due to the zeal of botanical collectors in the Far East—this practical handbook appears at

an opportune time, and should do much to stimulate the interest of amateurs in this valuable and varied genus.

"Primulas for Garden and Greenhouse" is divided into chapters on propagation, cultivation, the Primrose and Polyanthus, Primulas under glass, European and extra-European Primulas. At the end is a list of species with their flowering times at Edinburgh and near London. The question of propagation is dealt with in detail; sound advice is given on seed-sowing and treatment of seedlings. In the chapter concerning greenhouse Primulas the authors recommend calcium cyanide for use against green fly and white fly. Many amateurs will doubtless prefer to employ less dangerous fumigants, such as nicotine for aphides. No mention is made here of the root aphid which frequently attacks Auriculas and other European Primulas.

Descriptions and cultural notes of well over one hundred species and varieties of Primula and three species of Omphalogramma, all of which are in cultivation, occupy the greater part of the volume. The arrangement of the Primula species in sections is helpful, especially as the distinguishing characteristics of the sections are clearly stated.

The sixteen plates are well chosen, and with the possible exception of the one depicting *P. Florindae* do full justice to the plants they represent. The book is well printed, but an occasional misprint has crept in. The specific name *limnoica* is spelt *limnioca* (p. 122), *invalid* (p. 108) should, presumably, read *nivalid*. These are, however, small faults, and at the price the book represents very good value.

"The Art and Craft of Garden Making." By Thos. H. Mawson and E. Prentiss Mawson. Fifth edition. Crown folio. 440 pp. (B. T. Batsford, 94 High Holborn, 1926.) £3 15s. net.

With each successive edition Mr. Mawson's valuable book on Garden Making has received in this Journal the appreciation which is its due. In the latest issue it is claimed with much justification to be the most complete compendium of garden architecture. The 440 pages contain upwards of 500 plans, sketches and photographs with five full pages in colour, and cover the whole range of garden design in a comprehensive and masterly manner.

The author's achievements as a landscape gardener are well known and also the breadth of outlook he brings to his work. He holds that, broadly speaking, the principles of design in a garden remain unaltered and unalterable. In the sense of adaptation to modern needs there are ever-changing factors, but none of them is fundamental. His work therefore has been re-edited, and such alterations as are necessary to meet modern needs are incorporated. In his book Mr. Mawson desires to avoid fashions and designs which serve only the day and the hour. "A soft velvety lawn and a few stately trees well spaced are after all the most enduring sources of enjoyment." The principle underlying this sentence informs all Mr. Mawson's work, in spite of the large part which he allows to what may be called literally garden architecture.

This fine book is essential to every student of landscape gardening, and indispensable to the library of the gardening amateur.

"Gardens and Design." By J. C. Shepherd and G. A. Jellicoe. 248 pp. large 4to. (Benn, London, 1927.) £3 3s.

All who wish to make a garden, all who would understand the meaning of gardening, and all who love a garden might read these pages and ponder them. They are descriptive of gardens in many parts of the world, but the descriptions are made to illustrate principles and are not an end in themselves.

We feel tempted to quote at length from the text, but once started we should scarcely know where to end, and we must content ourselves by quoting from almost the last page. The authors comment upon the changes the different distribution of wealth and the altered conditions of life in our latter times are bringing about in the disposition of houses in England, and one can but feel and sympathize with the note of sorrow with which they write with a sort of prophetic suggestion, "Even now it is rare to see a garden planted for ten or twenty years hence, when it would not have been unusual in the past to plant only for posterity. Interest in our own garden lies in the immediate future, and soon there may be nothing of our own that will be worth passing on."

Necessity and convenience bring about alterations everywhere, but may those alterations make for future beauty and leave something for thankfulness in the spirits of generations to come, as we may often feel thankful for the care and skill expended on designing gardens in the past.

Though so worthy, text does not comprise the bulk of this book. Page after

page of well reproduced plates depicting gardens and houses in relation to them form a great and important feature of it, and they help to trace, as the authors have set themselves to do, the development of the garden in England from the Middle Ages to the present day.

We have said enough, we hope, to commend this book to all interested in the art of garden-making, and in the art of enjoyment of the garden, and now dismiss it with the wish that it had a stronger cover to support its weight, for the glossy paper is heavy—it weighs, though of only 248 pages, nearly 5 lb.

“Kulturhandbücher für Gartenfreunde.” Band I. Unsere Freiland-Stauden. Edited by Ernst Graf Silva Tarouca and Camillo Schneider. 4th Edition, 1927. x + 417 pp, with 449 text-figures and 8 coloured plates. (Holder-Pichler-Tempsky, Vienna; G. Freytag, Leipzig.)

“Our Hardy Herbaceous Plants” is the first volume of the well-known series “Kulturhandbücher für Gartenfreunde,” edited by Graf Silva Tarouca and Dr. Camillo Schneider. The Count, who has one of the most beautiful gardens in Europe at Pruhonice near Prague, in Czechoslovakia, is an enthusiastic horticulturist, and his co-editor, Dr. Schneider, is well known as an eminent botanist. The co-operation of the two in editing this series of books is therefore ideal, especially when as is announced on the title page they have taken into collaboration a number of other experts. The volumes of the entire series, which are large octavo size, are fully illustrated with black and white figures from excellent photographs, and the printing and paper are all that can be desired. The text is of course in German.

That a fourth edition of “Our Hardy Herbaceous Plants” has been called for indicates the ready sale it has had amongst German-reading horticulturists. Though containing some 130 pages more than the first edition (issued in 1910) the present edition is approximately the same size as the third which appeared in 1922. The number of photographs is also practically identical, though in some cases other species have been substituted. The photographs are culled from various sources, several being taken in Count Tarouca’s own beautiful garden, others at Haarlem and Ronsdorf, and a large number at Kew.

The arrangement of the volume consists of a general part of eight chapters (pp. 1–79) by various authors, dealing with such general subjects as the use of hardy herbaceous plants in the parks, in the alpine garden, in naturalizing, and on propagating and cultivation. This is followed by the main portion of the book (pp. 77–388), namely an alphabetically arranged list of plants with brief descriptions and cultural notes, somewhat on the lines of “Nicholson’s Dictionary of Gardening.” The work concludes with a large number of lists of species arranged for various purposes, namely, for seasonable displays, various soil conditions, rock gardens, walls, colour schemes, fruits, fragrance, bee flowers, etc.

There are a few adverse comments to make. It is clear that many of the Chinese novelties have not yet found their way to the Continent. The nomenclature is conservative, so much so that in some cases it would not be regarded as being up to date. But as a work of reference the volume should be on the shelves of all those who aim at a good collection of horticultural works.

“Principles of Plant Growth: an Elementary Botany.” By W. W. Robbins. vii + 300 pp. 8vo. (Chapman & Hall, London, 1927.) 11s. net.

A useful textbook for elementary students, written for American schools and naturally giving many illustrations from American sources.

“The Culture of Vegetables and Flowers from Seeds and Roots.” By Sutton & Sons. Ed. 17. 462 pp. 8vo. (Simpkin Marshall, London, 1926.)

This is a well-trying book and as such needs no praise, and it merits no adverse criticism, for it gives plain directions concerning the methods of cultivating all the vegetables and flowers commonly seen in English gardens, not of course including trees and shrubs or many perennials, but dealing fully with annuals and biennials. It is a book we can confidently recommend.

“Magnolias.” By J. G. Millais. 8vo. 251 pp. With illustrations by R. Millais and from photographs. (Longmans, Green & Co. Ltd., 1927.) 31s.

The existence of a handsome and profusely illustrated volume dealing exclusively with Magnolias is somewhat of a luxury, and all growers of hardy shrubs will be grateful to Mr. J. G. Millais for supplying a handbook of this attractive genus. The work is well got up and beautifully illustrated with collotype plates and half-tone plates from photographs and from drawings prepared by R. Millais

After the introductory chapters on "Magnoliaceae" and "Magnolias in British Gardens," in which the author philosophizes on modern tendencies not only in gardening but in music and art, and records the "pageant of beauty" which unfolds in his garden from March to August, we come to a chapter signed by George Forrest on "The Magnolias of Yunnan." This is succeeded by a botanical key of all the known species prepared by J. E. Dandy (throughout the work erroneously spelled Dendy), which is followed by an annotated list of species, with references to place of description, geographical distribution, etc. After this we reach (p. 75) the main and most interesting section of the book. This consists of a detailed account of the species, including a full technical description of each and much general and useful information, and frequently also cultural notes.

One is reluctant to criticize so useful a volume, but it should be pointed out that not only are there many typographical errors due to careless proof-reading but several more serious imperfections. In the first place, the key to the species (p. 41) is set out without any regard to the correct indentation of the contrasting headings, with the result that it is impossible to use. In the list of species recognized by the author (p. 75 *et seq.*) several confusing statements occur. Certain species are fully described and then stated to be conspecific with other species, for instance, *M. isarongensis* is described and apparently regarded as a valid species on p. 240, but this is followed by the statement on p. 241 that it is conspecific with *M. globosa*. Again, on p. 235 *M. taliensis* is described and then stated to be a young condition of *M. Nicholsoniana*. On pp. 117 and 118 the varieties *elongata* and *purpurascens* of *M. denudata* are enumerated, yet on p. 120 they appear as synonyms of *M. diva*. A further example is *M. Championii*, which is described on p. 94 as a species and on p. 97 as a variety of *M. coco*. There is one error amongst the excellent photographs, namely that facing p. 214, which is said to be *M. salicifolia*, but it clearly represents *M. stellata*.

"The Structure and Development of the Fungi." By H. C. I. Gwynne-Vaughan and B. Barnes. 384 pp. 285 figures. (University Press, Cambridge, 1927.) 15s. net.

It is some years since an English Textbook of the whole group of Fungi has been published, and therefore the appearance of a volume by a well-known specialist on the subject, in collaboration with a junior author, is to be welcomed.

The work consists of a large number of chapters which may roughly be grouped together as follows:—General Morphology, Physiology, mycological technique and a detailed but concise account of the various systematic groups of fungi, the last occupying by far the largest portion of the book.

The book is intended for students and primarily for those of one of the London University colleges but is entirely suitable for advanced students in other Universities. From this it may be gathered that the book is more of academic than of practical use for horticulturists. In fact it is expressly stated in the Preface that with regard to Plant Pathology the vast literature on this subject is practically entirely excluded. In its own sphere however the volume is a useful and valuable contribution.

"Roses and Rose Gardens." By Walter P. Wright. 3rd Edn. 8vo. 261 pp. (Allen & Unwin, 1927.) 15s.

The first edition of this book was reviewed in this Journal vol. xxviii, p. 300.

The most noticeable change is that some of the less satisfactory coloured plates have been discarded and replaced by others which on the whole are improvements, though in some cases where five pictures of roses are grouped on one plate the colour renderings do not represent those of the flowers illustrated very satisfactorily. The coloured pictures are on white grounds instead of green mounts.

Three chapters of the first edition have been omitted in this edition, viz. that entitled "Of the roses and the Nations" which gave lists of roses raised in different countries, and that "Of too much alike roses" which chiefly consisted of the obsolete lists of synonyms issued by the National Rose Society, as well as the twenty-four pages called "Reference Table of Varieties." This also is an improvement. The selections of Roses for various purposes have been revised but still contain too many names that are practically obsolete, such as Bessie Brown, Yvonne Vacherot, Mlle. de Watteville, and the long list of forty H.P.'s recommended by the Author might well have been reduced to four.

The chapter on pruning has also been revised and improved. The Author is right in recommending very little pruning of the climbing sports of the H.T.'s, for it is a peculiarity of these sports that if hard pruned many of them are apt to

revert very much to the dwarf character of the rose from which they sprang. The difficulty in dealing with these sports is to prevent them from becoming bare at the base and for this reason they are as a rule better adapted for growing on walls than as pillars.

The cultural directions are well explained and the chapter dealing with rose enemies is good so far as it goes. No mention however is made of stem fungus or canker, a disease which is now unfortunately rather widely spread, and responsible for the loss of many an amateur's roses. The book is well printed and nicely got up, its chief fault being the inclusion of too many varieties of roses which are now out of date. Many, however, may think this a venial defect, and the book should rank well among the books of a Rosarian's library.

"A Garden Book for Malaya." By Kathleen Gough, F.R.H.S. 8vo. 422 pp. (H. & F. Witherby, London, 1928.) 6s. net.

The author in this book has done an excellent service to the European who goes out to Malaya and carries his love of gardening into his new home. Having had seventeen years' experience of garden making there, she writes as one having authority on what plants will succeed and give the best results under the conditions of low country gardening, the type of gardening chiefly practised in Malaya.

The twenty-five chapters deal with special subjects, each in their way giving sound advice on the principles and practice of horticulture as applied to tropical gardening. They form a safe guide for the novice, as well as containing much of great interest to those who already have some experience.

It is stated that owing to the climate being constantly moist, South African plants, with few exceptions, are not amenable to cultivation in Malaya because of their need for a dry heat and cooler wintering periods. For the same reason other bulbous plants such as Tulips, Daffodils and Hyacinths are a failure.

Dealing with seeds, the fact is emphasized that these soon lose their vitality in the tropics, and it is better to order in small quantities and sow at once. Home-grown seeds are recommended for sowing from September to April, and Australian seeds from May to August owing to the different periods of harvesting. Well-deserved tributes are paid to various firms of repute at home and in Australia who make a special point of sending seeds to the tropics.

The book is well written in an easy, pleasant style and is full of interest from cover to cover. There are a few spelling mistakes but none such as need cause any doubt as to the plant intended.

"The Useful and Ornamental Plants of Trinidad and Tobago." By W. G. Freeman and R. O. Williams. 8vo. 198 pp. Being Memoir No. 4 of the Dept. of Agriculture, Trinidad and Tobago. 2s. 6d. paper covers.

This useful book consists of an alphabetical list of plants growing in Trinidad, with notes upon the habit of each, their economic use or use in gardens, and the conditions under which they thrive. Finally there is a list of plants for various purposes, such as Fibres, Resins, and so on, and a botanical key to the Genera.

The authors are to be congratulated upon bringing to a conclusion a piece of work which must have occupied much time and involved much labour.

"The Diseases of Sugar Beet." By Dr. Otto Appel. English Edition. By R. N. Dowling. Translated by C. Leslie Wood. (Ernest Benn, London, 1927.) 6s. net.

This book is a translation of the well-known work by Dr. Otto Appel of Berlin. It deals with 22 fungus diseases and insect pests of the Sugar Beet and is illustrated by excellent coloured illustrations showing the general appearance of the disease in life size, and should be of value to all interested in Sugar Beet growing in this country.

"The Book of Bulbs." By F. F. Rockwell. 8vo. 264 pp. (Macmillan Company, New York, 1927.) 12s. 6d. net.

This book is intended for American gardeners and the less experienced of those, consequently it cannot be expected to be of great use in Britain. It is interesting reading if only to gain an idea of conditions on the other side of the Atlantic.

A wide view is taken of bulbs, and the term is made to include corms and tubers and almost any plant with a fleshy root such as Spiraeas, Dicentra and

Lily of the Valley. It is a pity that a true bulb is stated "not to develop to its full size in a single season," for those of *Snowdrops* and *Tulips* and *Fritillaria* do so regularly. Nor is it correct to say a corm "lasts but a single season" seeing that the corm of a *Cyclamen* may exist without division for a century and more.

The use of capitals in plant names strikes us as careless, especially in their neglect for generic names combined with the specific as in *phlox drummondii* and *scilla italica*, which latter should not grow about a foot high. Misprints and slips in spelling are rather numerous—Iris *christata*, *chronodoxa canadensis*, *cranthis hymenalis*. In classifying *Daffodils*, *N. nanus* should not be placed as a *cyclamineus* nor *Firetail* as a *poeticus*.

In chapters on *Gladiolus*, *Dahlia* and *Paeony* may be the most useful for English readers, but it is confusing to find *Montbretias* and *Tritonias* included among half-hardy spring flowering bulbs.

The photographic illustrations show rather small plantings in very new-looking gardens. The outline drawings such as those of *Tulip* types, methods of propagation are more useful.

"A Year in My Flower-Garden." By E. T. Brown. 8vo. 220 pp. (Chapman & Hall, London, 1926.) 7s. 6d. net.

This 8vo volume is intended to teach amateurs the management of a garden by carrying out operations as arranged in the form of a diary. It is an ingenious arrangement of jobs for every fortnight of the year. Some of them are so oddly timed that future jobs would certainly be involved if the advice were put into practice. To lift *Colchicums* and *Crocuses* in May's first fortnight and to divide *Flag Irises* between the 16th and 31st of the same month would surely necessitate the buying and planting of a fresh stock.

Searching lists for the form of *Coleus thyrsoides* possessing "variegated foliage of great brilliance" would prove a longer job than the fortnight allowed.

It is hard to determine what climatic conditions the author caters for. *Chamaerops humilis* as a lawn plant will not be much use out of Cornwall—nor even there will *Lavandula Stoechas* provide much of a hedge. The proof-reading is bad. *Citrus Ardoinii* and *Cystisus Adrianus* occur in one line, *Saphne aucorum* a little lower. *Echeveria* is found in the text and index, but *Aubrieta* (the commonest and perhaps most slovenly of mistakes) occurs twice in the text and *Aubrieta* once, and again in the index.

It is surprising that anyone should advocate cutting away old fronds of ferns. The illustrations seem to be taken from many gardens and mostly from those too large and pretentious to be managed by an amateur even with the work so carefully planned out for the whole year.

"Beautiful Flowers of Kashmir." By Ethelbert Blatter. Vol. I. 8vo. 198 pp. (John Bale, Sons & Danielsson, London, 1927.) 21s. net.

It is curious that the plants of Kashmir so frequently praised by travellers who have seen them and for the most so well suited as to hardness for British gardens have been so slow to reach us.

This good book, following that by B. O. Coventry (published in 1923), should do much to encourage the cultivation of many of the plants pleasingly figured in both. This later book gives a further number of the species belonging to the genera included, which are those from *Ranunculaceae* to *Compositae*. Concise keys are provided by which the species of each genus may easily be distinguished. The descriptions are clear and in simple language, difficult botanical terms having been very carefully avoided, and when used explained, so that anyone with a strong enough desire to find out the name of a plant should be able to do so with the help of the excellent coloured illustrations and the short glossary.

The only fault of the coloured figures is that they have been so greatly reduced from natural size. This may be unavoidable with such as *Paeonia emodi*, but very regrettable in *Sedum quadrifidum*, *Anemone obtusiloba* and *Paraquilegia caespitosa*, where one flowering shoot of life size would have been more beautiful and useful.

The frontispiece of *Meconopsis aculeata* makes us long for more on the same scale; but that would have made it impossible for the number of species figured to reach as it does almost to 200. Many of those figured, such as the charming pink daisies of the two *Allardias*, the blue *Corydalis cashemiriana*, and *Adonis chrysocaulus*, would be great acquisitions to our rock gardens.

Its clearness of type and freedom from misprints and other minor errors make the book a delightful addition to illustrated local floras.

"Wild Flowers of Kashmir." Series II. By B. O. Coventry. 8vo. 100 pp., 50 plates. (Raithby Lawrence, London. 1927.) 16s. net.

The publication of this second series of fifty coloured plates provides a further stimulus for those who care to grow true species instead of garden varieties of plants. Only five of those figured in it are in general cultivation. *Papaver nudicaule*, *Delphinium cashmirianum*, *Primula involucrata*, *Potentilla nepalensis*, and *Clematis montana*, and very few more are to be found in any English garden. *Gentiana Moorcroftiana*, the blue *Corydalis cashmiriana* and its purple sister *C. diphylla*, would be treasures in any garden, but have not reached us yet. *Gentiana Kurroo*, *Paraquilegia* (which we used to know as *Isopyrum grandiflora* and *Epilobium latifolium* are worthy of fresh efforts to introduce, since those of former introductions seem to have almost died out.

The illustrations are from actual photographs, and are therefore valuable records of the form and habit of each plant, but alas, in very few cases is the colour as satisfactory. The brilliant poisonous-looking green of glossy leaves, and the dull, over-boiled effect of downy or glaucous foliage seem to be defects impossible to avoid under this process of illustration.

The most successful plates are those representing that much to be desired plant *Anemone biflora*, the Far Eastern representative of *A. coronaria*, and the strange, woolly *Saussurea sacra*. As in the former volume the text is arranged under a uniform plan of headings such as name, description, flowering season, locality, etc., making it very easy to find the information required.

The book is a delightful addition to the botanist-gardener's bookshelf.

"Mushrooms and Toadstools. An Account of the More Common Edible and Poisonous Fungi of Canada." By H. T. Güssow and W. S. Odell. 274 pp., 128 plates, 2 col. (Division of Botany, Dominion Experimental Farms, Ottawa, Canada.) Price \$1.

The mycological literature of Europe is rich in popular illustrated works, of varying form and merit, intended for the guidance of those interested in the larger fungi. Some of these confine themselves to the consideration of fungi from the gastronomic point of view; others appeal to a wider circle of readers and endeavour to create a general interest in these fascinating forms of plant life. Outside Europe works of similar appeal are rare, and are in fact practically confined to the United States.

It is therefore with great pleasure that we welcome an attempt to encourage the study of fungi from the Dominion of Canada. The present volume, while intended primarily as a guide to the edible and poisonous species of Canada, is also of wider appeal, and will prove a useful introductory work for the student of Canadian fungi.

The species dealt with comprise over seventy forms which are common in Canada. These are mainly Agarics, but representatives are also included of the families Polyporaceae, Hydnaceae, Clavariaceae, Tremellaceae, the Gasteromycetes, and the larger Ascomycetes. Short descriptions are given, and in most cases these are supplemented by reproductions of photographs (natural size) and in two cases (*Amanita muscaria* and *A. phalloides*) by coloured plates. It is to be noted that the form of *A. muscaria* which is figured is not the common red form of Europe, but the orange variety, which is the more usual form in the United States and Canada.

The descriptions of genera and species are prefaced by a general introduction descriptive of the larger fungi and their classification, with keys to the genera considered. At the end of the book are several chapters containing useful information on the uses of fungi as food and methods of preparation, symptoms of poisoning by fungi and treatment, and on the cultivation of the edible mushroom.

While the authors have endeavoured to make their descriptions as simple as possible, the use of a certain number of technical terms is unavoidable; these are explained by means of a glossary. For those wishing to pursue the subject further a list of books is appended, these being mainly of a popular type. Apart from American books, which naturally are given rather fully, the list is singularly meagre. A few British works are added, but it is regrettable that such a very useful small book as Ramsbottom's "Handbook of the Larger British Fungi" should be omitted.

The volume seems to be practically free from typographical errors, is clearly printed and of pleasant appearance. Its usefulness in practice is however somewhat marred by the inconvenient size. In order to accommodate the many natural size photographs a quarto page has been chosen, and this, combined with the heavy glazed paper which has been used, produces a volume which is

very heavy to handle. The book should prove extremely valuable to Canadian students of fungi, and the very low price of \$1 is remarkable for a book of this quality.

"The Beginner's Garden." By Mrs. Francis King. xii + 125 pp. 8vo. (Scribner, London, 1927.) 7s. 6d. net.

There are plans here and pictures for the beginner to study as well as helpful text written by one with an admiration for and knowledge of English gardens, and a desire to see them adapted to the American conditions for which she writes. So we read of Phloxes and Asters, two things too often despised in America as common wildings for which the garden can find no space, as well as of Paeonies and Lilacs, the two things which succeed so marvellously in American conditions. While written for American readers and containing little not already said so far as English gardens go, yet a beginner here as well as across the Atlantic may read this book with profit. The "get up" is good, but the price is high, and the lack of an index to be deplored.

"Wild Vegetables and Salads and their Vitamin Values." By Mrs. M. Grieve and E. Oswald. 4 + 104 + v pp. 8vo. (Mrs. Grieve, Chalfont St. Peter, Bucks, 1926.) 1s. 6d., paper.

The title continues "with Notes on Vegetable Cookery and Salad Making, being Part One of Herbs and Vegetables in the Orchard and in the Wild by," and on the title page "Vegetables from the Hedgerows. An account of the many Wild Plants of our Fields and Hedges that have been employed as Vegetables and Salads, with mention also of those used as substitutes for Tea and Coffee and in the making of Beers and Wines."

The book is an interesting collection of information upon the many things that have been and which might still be used by the thrifty country woman, and which might in a measure replace the tinned food which is so often now used in place of fresh prepared at home.

"Everyman's Book of Garden Flowers." By John Halsham. 374 pp. 8vo. (Hodder & Stoughton, London, 1926.)

Alphabetically arranged and well illustrated, this is a catalogue of flowers for the outdoor garden, the pictures sometimes representing plants not mentioned elsewhere in the book.

It is neither better nor worse than many other books of its type, and tells very little more than many well arranged catalogues from seedsmen and nurserymen. It would be easy to find fault with the lists of plants given and with the paucity of directions for growing plants out of the ordinary, but hints may be picked up from it by the beginner, who will discover for himself how far short of a full guide the book is. Few would succeed with *Iris Kaempferi* if they trusted to the directions given concerning it, nor would *Nigella* or *Aster Amellus* behave well except by good luck, if their cultivator depended upon this book alone for guidance.

It is well got up and nicely printed.

"The Magic of Herbs. A Modern Book of Secrets." By Mrs. C. F. Lezel. 8vo. 320 pp. (J. Cape, London, 1926.) 10s. 6d.

"Garden Craft in the Bible and Other Essays." By Eleanor Sinclair Rohde. 8vo. 242 pp. (Herbert Jenkins, London, 1927.) 10s. 6d.

These two books are alike in that their authors have gathered widely and wisely from the wisdom and legends of ancient and medieval writers to present the result in well-arranged order to those who have neither time nor opportunity to search the old books on their own behalf.

Mrs. Lezel, in her first five chapters, gives an excellent survey of the history of herbs in medicine. Starting from Egyptian and Jewish legends she works on through Egyptian papyri, the Code of Hamurabi 2250 B.C. from Nineveh, and Hippocrates in Greece in the fifth century B.C., "the Father of Medicine," to the Doctrine of Signatures of the fourteenth century, to close with the death of occult medicine in the eighteenth century.

The remaining chapters contain recipes marshalled under such heads as Love Philtres, Poisons and Narcotics, Cosmetics, Scents, and Apothecaries, Their Shops and Gardens. There is not a dull chapter among them, and very few misprints or errors. It is worth noting that on p. 61 part of a sentence needs transposing, to state that *Tragus*'s real name was *Bock*, instead of the opposite, and on p. 69 the "m" needs changing to "n" in the middle of *Adanson*. It seems

almost a pity we cannot now believe the lotions and salves will work the miracles for which more credulous generations compounded them.

Miss Rohde's book is in the form of essays dealing with various epochs of gardening from Bible days to those of Queen Anne—forming the first nine chapters. The other seven are on such subjects as the Cottage Garden, Oxford Gardens, and the Sundial.

An unusual amount of reading is condensed into the text of this pleasantly written and authoritative book. The twenty-six illustrations are well chosen and reproduced.

It seems a pity that the title has been continued as a headline throughout the book. It is so incongruous when opposed to the Queen Anne Garden or Old Bee Books on the following page.

The chapter on Medieval Flower Symbolism is especially delightful, but the whole book should be read by all who like to know more about a plant than its place in a colour scheme, and what former gardeners enjoyed and sought after rather than what is at the moment most fashionable and expensive.

"Root Development of Field Crops." By John E. Weaver. xii + 291 pp. 8vo. (McGraw, Hill, London, 1926.) 15s. net.

It is strange but botanists have paid extremely little attention to the form and development of roots in connexion with their environment, and this book dealing with the habits of roots of several crop plants and a few wild plants is therefore the more welcome. Of plants grown in British gardens the sunflower, the potato, and the maize are the only ones treated. A summary of the details concerning the potato will illustrate the method of treatment. Potato plants in mellow loess soil in Nebraska after 56 days (the surface soil only being hoed) showed as many as 55 roots springing from a single point and spreading almost horizontally in the top 9 or 12 inches. None had penetrated below 15 inches. Later many turned abruptly down and at maturing had reached a depth of 2-3 or even nearly 4 feet, some reaching 4·7 feet, the abrupt turn occurring only after the roots had grown obliquely downward. The roots branched profusely throughout. Both lateral spread and penetration were modified by differences in the water content, and fertilization with nitrate led to increased branching and checked downward growth.

It is obvious that thorough study of root systems along such lines as these would give valuable information concerning methods of cultivation, but the study would need to be carried out on a variety of soils as well as under a variety of conditions.

The author has done well to draw particular attention to the facts so far as they have been investigated, and he has described a method which may well be followed in future investigations.

"Trees." By Dr. Macgregor Skene. 256 pp. 16mo. (Williams & Norgate, London, 1927.) 2s. net.

A volume of the "Home University Library of Modern Knowledge," a few volumes of which have previously come under notice—this gives a good account of the life of trees both as individuals and in communities and can be recommended not only as accurate but as interesting to read.

"British Wild Fruits and how to identify them." By R. Morse. 64 pp. 8vo. (Sharp, London, 1927.) 1s. 6d. net.

The title indicates the contents, but it should be understood that only juicy fruits are included. Within those limits the text and most of the figures will help the ignorant to identify any wild fruit (and a few naturalized ones) he may meet in his country rambles.

"The Nervous Mechanism of Plants." By Sir J. C. Bose. xix + 224 pp. 8vo. (Longmans, Green, London, 1926.) 16s. net.

The author, whose ingenious methods of investigation are well known, believes he has discovered a nervous mechanism in plants comparable in many ways to that existing in animals. The volume before us gives an account of the experiments he has made, mainly with *Mimosa*, and the conclusions to which the results obtained have led him.

"The Study of Vegetation." By E. P. Farrow, M.A., D.Sc. 23 pp. 8vo. (Blackie, London, 1926.) Paper covers, 2s.

This little book is reprinted from "Discovery," and is high-priced, probably because the profits are to be devoted to the Blakeney Point Research Laboratory. Its main value lies in the emphasis placed upon observation and careful consideration of things seen as opposed to experiment. The value of observation as a means to discovery was recognized by the older naturalists—that race so rare to-day—and is apt to be overlooked by the laboratory-trained student.

"Gardens for Town and Suburb." By V. N. Solly. 112 pp. Plates. 8vo. (Benn, London, 1926.) 15s. net.

Plans and illustrations of small gardens, forecourts and roof-gardens with the necessary letterpress descriptive of the things pictured, and a very useful list of plants which will flourish under town conditions, constitute a guide for in many seek. We would often plead for more flowers than there is room for in many of the designs, but that is doubtless because we feel a garden in England should be in the main a place for flowers, not only a place for any artistic design.

"Seed Testing." By John Stuart Remington. 144 pp. 8vo. 33 figs. (Pitman, London, 1928.) 10s. 6d. net.

In the brief introduction an outline of the development of seed testing is presented, but the pioneer work of the University Colleges, Agricultural Societies and enlightened business houses, besides that of the Food Production Department, receives no mention. The subsequent three chapters give a brief, simple and clear account of methods of sampling and of carrying out germination tests. A very short chapter dealing with "Flower Seed Testing and Soil Trials," although of interest to the horticulturist and farmer, fails to do justice to either topic. Approximately half the book consists of descriptions of the weed seeds found in clover and grass samples. A multitude of small errors, particularly irritating to a systematic botanist, is to be found in the specific names, especially those in the tables (there are about twenty such in one table, pp. 55 and 56). Several of the plates (pp. 71, 75, 91, 94) are very poor; no indication of the magnification is provided, although various degrees of magnification are employed on the same plate.

The book may serve as an elementary introduction to the subject, and prove of use to those who intend to qualify as seed analysts. It is, however, expensive at the price.

"Gardening without Worry: Simple and Comprehensive Information for the Amateur Gardener." By George Barlow. 190 pp. 8vo. (Seeley, Service, London, 1928.) 3s. 6d. net.

When one finds so challenging a title one opens a book to look for evidence of first-hand acquaintance with the matters of which it treats, little expecting to find it with all the matters touched upon when so wide a field (if one may be allowed to use that term in this connexion) is covered as here. Unfortunately our apprehensions are again justified here. Who really familiar with them would grow *Berberis stenophylla* and *B. Wallichiana* (even if it could be bought) and Juniper for the beauty of their berries, or in England plant *Vaccinium corymbosum* or *Empetrum nigrum* for the same purpose where space is limited? Where may one find *Crataegus nigra* worthy a place in the same select company? Why call *Andromeda floribunda* 'Wild Rosemary' and *Spiraea Douglasii* 'Meadow Sweet'? or include *Hamamelis japonica* where *H. mollis* finds no place? What help is there in "Jasminum (Jasmine).—A free growing climber bearing white or yellow flowers; ordinary garden soil"? or in "Lonicera (Honeysuckle).—Grows freely, producing a variety of coloured flowers"? It really is not good practice to plant Tulips in September–October, nor are Snowdrops best in grass, the hardy Maidenhair (*Adiantum Capillus-Veneris*) is not safe in most parts of England, and so one might go on, though of course there are some pieces of advice to which no exception can be taken, but to follow all the advice given as it stands will, we fear, not make "Gardening without Worry."

"Plants from Seed." By A. J. Macself. 239 pp. 8vo. (Butterworth, London, n.d.) 6s. net.

Two or three essays on seed sowing, and lists of annuals, perennials, and rock plants, with notes of special soil requirements, constitute this book. One could

have wished for more detail regarding the prevention of the growth of moss, algae, and so on, on pots; many would have welcomed information regarding the treatment of tree and shrub seeds, concerning which our author occupies only four pages; a little more emphasis on the desirability of seed sowing the year round and the immense importance of sowing as soon as seed is ripe, or even before, would not have been amiss; a little more instruction on the way to use the miniature bootjack depicted in one of the illustrations would have helped to save the life of a few seedlings. Plant names are usually correctly spelt, though *Eschscholtzia* dies hard. Of errors generally there are few, but not many would approve of the adjective "gorgeous" being applied to the flowers of any Barberry!

"Chrysanthemum Culture for Amateurs." Ed. 4. By H. J. Jones, V.M.H. 142 pp. 8vo. (Bazaar, Exchange & Mart, London, 1928.) Paper covers, 2s. net.

Chrysanthemums are perhaps rather less the amateur's plants than they used to be, but they have increased their vogue in other directions and have multiplied their varieties just as other florist's flowers have. There was thus need for revision of this well-tryed book, and no one could have been found who has greater love for the plant or more sympathy with its growers than Mr. H. J. Jones, to whom the task of revision was confided. Here we have the result of his wide experience and ripe judgment, and the amateur will not look to it in vain for guidance. It is, however, surprising to find no mention of that troublesome pest, the capsid bug *Lygus pratensis*, that so often does great damage to the buds and is so difficult to combat except by means of nicotine and vigilance, or of surface grubs that sometimes lay low the hopes of the lover of early-flowering chrysanthemums.

"A Garden of Herbs." By Eleanor Sinclair Rohde. Ed. 3. 8vo. xv+300 pp. (Jenkins, London, [1926].) 10s. 6d. net.

To have achieved a third edition in a comparatively short time shows that Miss Rohde has chosen a popular theme and dealt with it well and interestingly in her "Garden of Herbs." This new edition contains many new recipes from old texts and there are some new illustrations.

"The Principles and Practice of Horticulture." By A. S. Galt. 8vo. viii+240 pp. (Clive, London, 1926.) 3s.

From one point of view the title of this excellent little book is misleading, for horticulture is concerned with much more than the cultivation of a few vegetables and fruits. Principles of cultivation are briefly and on the whole clearly dealt with so far as soil and its treatment go, but we find no account of the environment of the aerial part of the plant or of the work that part does or how it does it, and, except a chapter on pruning, little about the treatment that the aerial part of the plant calls for. The plans for cropping an allotment and the cultural directions for special vegetable crops seem very good, and the recommendations concerning varieties reliable. For the allotment and cottage gardener the book should prove very useful, and if something were added concerning the cultivation of flowers and the philosophy, for example, of thin sowing, staking, pinching and the like were treated upon, it would have a much greater value and at the same time would make a much wider appeal. In another edition a few misprints will need correction, e.g. on p. 15, "imponderable" should be "impalpable," and the formula " $s.g. = 2.2$ " is little likely to be understood by those to whom this book should be most useful. The explanation of the behaviour of clay in nature by reference to its behaviour up to 212°F . is not quite clear, owing to the separation of two paragraphs. On p. 21 "warping" is referred to, but what it actually is is left to be inferred. After all, these are minor points, and in the main the little book is excellent.

"A Textbook of General Botany for Colleges and Universities." By Richard M. Holman and Wilfred W. Robins. 624 pp. 415 figures. (John Wiley & Sons, Inc., New York; Chapman & Hall, Ltd., London.) 1927. 20s. net.

This is a new and considerably emended edition of a well-known American textbook. The first edition has been in use in England for some time; the clear treatment and good illustrations having proved attractive. With the improvements in the second edition the work may be confidently recommended for students in colleges and Universities.

"Das Kakteenbuch." By Walter Kupper. 201 pp. 12 coloured plates and 173 photographs. (Verlag der Gartenschönheit, Berlin.) 1928.

Up-to-date volumes dealing with the Cactaceae in the English language unfortunately are scarce. The beautiful monograph in four quarto volumes by Britton and Rose is beyond the reach of most and in any case it is exclusively botanical. Watson's "Cactus Culture for Amateurs" has been out of print for many years.

A useful work by Walter Kupper in the German language has recently appeared. The volume is a large, square octavo and is the eleventh number of the "Bücher der Gartenschönheit" Series. It is illustrated by coloured plates and a large number of excellent and well reproduced photographs such as one is accustomed to expect from the Gartenschönheit firm.

The text is arranged in chapters as follows: Historical; Uses; Distribution; General Account; Conditions of Life, Growth, Form; Culture; Reproduction; Improvement; Diseases; and Selection-lists of Species. The general portion (110 pages) consists of a short account of the genera (arranged after Vaupel), after which the genera (with a selection of species) are briefly dealt with seriatim. A good deal of information is contained in this part of the work, but it is not easy to extract. A more systematic arrangement simplified by means of sub-headings and paragraphs would have rendered the contents more readily intelligible, especially to those whose knowledge of German is limited. Keys to genera and species would have been particularly valuable.

The volume is a useful addition to the literature on the subject, especially from the cultural standpoint, but apart from the illustrations its use will be practically confined to those who have a good working knowledge of German.

"Greenhouse Flowers and how to grow them." By H. H. Thomas. 184 pp. 8vo. (Cassell, London, 1928.) 2s. 6d. net.

The beginner may well be thankful to have so clear a book of sound advice at so low a price. No important thing the amateur needs direction in seems to be omitted; even his holiday time is foreseen and advice on procedure given, and the advice is in all instances good. It is a book we can unreservedly commend to the beginner.

"Common Hongkong Ferns." By L. Gibbs. 8vo. 84 pp. (Kelly & Walsh, Hongkong, 1927.) \$2.50.

This little volume has no pretensions to scientific work, but may be found useful as a guide to the identification of the commoner species prevalent in the district.

In the brief introduction the author explains in popular terms the difference between Ferns and Flowering Plants, and whilst describing the normal types usually refers to the species as varieties. The reader is not informed whether varieties in the species occur: even the well-known sporting of *Nephrolepis exaltata*—known in America as the Boston Fern—is ignored.

The numerous illustrations should materially assist the identification of the various species described.

NOTES AND ABSTRACTS.

[For Index of Periodicals quoted see previous volumes.]

Barberry, The Common, and Black Stem Rust. By E. C. Stakman, F. E. Kempton, and L. D. Hutton (*U.S. Dep. Agr., Farm Bull.* 1544; figs.).—Recommends the eradication of common barberry (*Berberis canadensis*) on account of the prevalence of one stage of the black stem rust of wheat upon it. *B. Aquifolium* is said occasionally to harbour it and *B. repens* to be immune. [So far as we know *B. Aquifolium* has not proved susceptible in England, although its hybrid with *B. vulgaris* (*B. × Neubertii*) has.] It is, as all English farmers know, unwise to allow the common barberry to exist near wheat fields, and the present bulletin recommends a dressing of 20 lb. salt to the bush as the most satisfactory way of eradicating it.—*F. J. C.*

Black Currants, Reversion of. I. Symptoms and Diagnosis of the Disease. By J. Amos and R. G. Hatton (*Jour. Pomology*, vol. vi. No. 3, September 1927, pp. 167–183; 7 plates).—A detailed account is given of the leaf characters of normal and reverted bushes in relation to (i) varietal differences, (ii) the position of leaves on the shoot, and (iii) different types of leaf.

A series of excellent photographs illustrating the various points in the discussion are produced.

For the purpose of "rogueing," it is stated that the only sure diagnostic characters are the veining and serration of the leaves.

The causes of "false" reversion are (i) damaged growing tips, (ii) divided tips, (iii) the forcing into growth of dormant buds, and (iv) check due to drought. The methods by which false and true reversion may be distinguished are described.

G. F. W.

Black Currants, Reversion of. II. Its Incidence and Spread in the Field in relation to possible Control Measures. By J. Amos and R. G. Hatton (*Jour. Pomology*, vol. vi. No. 4, February 1928, pp. 282–295; 1 plate).—The second part of the paper on the reversion of black currants deals with the methods for eradicating the disease in young plants in the nursery and in established plants in the plantation.

The rapid spread of the disease has been traced to an exceptionally heavy centre of reversion and big bud in close proximity to healthy bushes. It was found that the annual spring application of Lime Sulphur is insufficient to stem the tide of such continuous heavy infection. The intensity, rate of spread and apparent development vary from bush to bush.

Frequent replanting of healthy bushes in the site of diseased ones removed suggests that infection is not carried through the soil.

A minor surgical operation, e.g. the removal of reverted portions on otherwise healthy bushes, has not materially checked the disease. It is, however, urged that diseased portions of bushes or the entire bush should be removed as soon as the disease appears.

There is danger in taking cuttings from apparently healthy portions of diseased bushes.

The results obtained from raising strains comparatively free from the trouble have proved so satisfactory that it appears probable to build up reversion-free stocks.—*G. F. W.*

Bridging Hosts. By H. M. Quanjer (*Rec. des Travaux Botan. Néerlandais*, 25a, 1928; pp. 250–259).—The author discusses the manner in which certain parasites, e.g. eelworms and fungi, may attack new hosts, using certain known hosts as "bridges" by which to pass to others upon which they may become specialized.—*F. J. C.*

Bud Selection in Valencia Orange; Progeny tests of Limb variations. By A. D. Shamel, C. S. Pomeroy, R. E. Caryl (*U.S.A. Dep. Agr. Dep. Bull.* 1483;

figs.; July 1927).—Bud variations in the Valencia orange have been found to be stable when propagated vegetatively. Much variation is apparent in the orchards of Valencia oranges and the cause of this is thought to be the unintentional propagation of bud variations on the fruit trees.—F. J. C.

Cabbage Root Fly and its Parasites: A Study of *Hylemyia* (*Chortophila*) *brassicæ* Bouché, The; with some Notes on Some Other Dipterous Pests of Cruciferous Plants. By K. M. Smith (*Ann. App. Biol.*, vol. xiv. No. 3, August 1927, pp. 312-330; 1 plate; 10 figs.).—The primary intention of the author in this paper is to fill a gap in the entomological literature of this country by giving a detailed account of the cabbage root fly and its parasites.

A paragraph is devoted to synonymy. The insect was studied under field, insectary and laboratory conditions.

Detailed descriptions are given of the various stages together with their duration. The life history and habits are dealt with in detail.

The food plants are confined almost entirely to the family Cruciferae, and the fly chooses young plants of cabbage, cauliflower or brussels sprouts almost indiscriminately.

Four other species of dipterous larvae are associated with the larvae of the cabbage fly and are described and figured.

Amongst the natural enemies of the cabbage fly are (i) two species of Staphylinid beetles, both predaceous on the pupae; (ii) a species of Cynipid "wasp," which accounted for 30 per cent. mortality of the second generation pupae; (iii) a Braconid parasite of the pupa; (iv) two species of Ichneumonids; (v) a predaceous dipterous larva (*Phaonia trimaculata*), and (vi) a probable carnivorous larva of a Tachinid fly.

A brief description is given of an unusual form of parasitism of the adult fly by some unknown micro-organism.—G. F. W.

Chafer Beetles. (*Forestry Commission Leaflet*, No. 17, November 1927, pp. 1-6; 3 figs.).—Information is given of the damage done to forest trees by (I) the cockchafer (*Melolontha melolontha* L.), (II) summer chafer (*Rhizotrogus solstitialis* L.), and (III) brown chafer (*Serica brunnea* L.).

The distinguishing characters of the adults and their larvae are given.

The life cycles are four or more years for the cockchafer, three years for the summer chafer and two years for the brown chafer.

The damage to plants due to cockchafer larvae is that the roots are gnawed and cut through, whilst the damage done by the other species is that the roots are merely girdled and rarely cut.

Control measures include (i) the treatment of fallow land by thorough digging in spring accompanied by handpicking, and (ii) the injection of carbon bisulphide into beds occupied by seedlings and transplants. Carbon bisulphide should be applied by means of a "Vermorel" injector, and it was found that seven to twelve 5-gramme doses ($\frac{1}{2}$ oz.) was sufficient for 1 sq. yard.

Frequent and thorough inspections of nursery stock are necessary, especially during the active larval period, which in the case of the cockchafer and the summer chafer is from April to July, and of the brown chafer from June to September.—G. F. W.

Garden Lore. By the Rev. H. Friend (*Gard. Chron.*, May 21, 1927, p. 354, in continuation).—Ideal gardens. These include Adonis Flowers, Judas Tree, Homer's plants, the Garden of the Madonna.—E. A. B.

Gladiolus. By James Kelway (*Gard. Chron.*, May 21, 1927, p. 356, continued on pp. 392, 415, 435).—A useful account of the development of the hybrid races of the large-flowered Gladioli.—E. A. B.

Humble Bees (*Bombus*) In North Wales, Note on the Activities of. By C. L. Walton (*Ann. App. Biol.*, vol. xiv. No. 4, Nov. 1927, pp. 465-469).—A short account is given of fifteen species of *Bombus* observed in North Wales and adjacent districts during the years 1919 to 1927 inclusive.

Each species is dealt with separately and notes are added as to their relative abundance, seasonal activities and flowers visited.

A table is given showing the number of Humble Bees (8 species) found visiting the flowers of fruit trees (8 species), economic leguminous crops (7 species) and vegetable marrow.—G. F. W.

Insect and Other Invertebrate Fauna of Arable Land at Rothamsted, The. Part II. By H. M. Morris (*Ann. App. Biol.*, vol. xiv. No. 4, November 1927, pp. 442-464).—The investigations were carried out in 1923, 1924 and 1926 to

ascertain the effects of natural and artificial manures on the soil fauna of arable land. Further, an attempt was made to discover whether there was any striking difference in the species present and their relative numbers and distribution in varying depths.

The method of investigation is described.

The mechanical analysis of the soil in the various plots is given together with a list of the various weeds found therein. The six plots received the following treatments per acre: (i) unmanured (control); (ii) ammonium salts (equal parts sulphate and muriate of ammonia), 400 lb.; (iii) superphosphate, $3\frac{1}{2}$ cwt.; (iv) dung, 14 tons; (v) dung, 14 tons, superphosphate, $3\frac{1}{2}$ cwt. and sulphate of potash, 500 lb.; and (vi) dung, 14 tons and ammonium salts, 400 lb.

Samples were taken in five layers (soil level to nine inches) at various times of the year and the results are given in detail.

From the census of insects and other invertebrates obtained, it appears that whereas the effect of dung increases the numbers and species very considerably, artificial manures have little or no effect on the soil fauna.—G. F. W.

Insecticides, Studies on Contact. Part V. The Toxicity of the Amines and n-Heterocyclic Compounds to *Aphis rumicis* L. By F. Tattersfield and C. T. Gimingham (*Ann. App. Biol.*, vol. xiv. No. 2, May 1927, pp. 217-239).—An extension of a previous paper (*Ann. App. Biol.*, vol. xii. No. 2) in which an account of the insecticidal properties of the simpler chlor, nitro and hydroxyl derivatives of benzene and naphthalene were reviewed.

The experiments are explained in detail and the results as to the toxicity of the various compounds to the bean aphid are set out by means of tables and graphs.

Tetramethylammonium showed certain physiological effects similar to those of nicotine. Aniline and most of the aliphatic anilines showed slight toxicity. o-Nitraniline proved to be the most toxic of the aniline derivatives.

Among the heterocyclic compounds, the most highly toxic was nicotine. The heterocyclic rings constituting the molecule of nicotine, however, are much less toxic than nicotine. Pyridine shows little insecticidal action. Hydrogenation of Pyridine increases its toxicity.—G. F. W.

Insecticides, Studies on Contact. Part VI. The Insecticidal Action of the Fatty Acids, their Methyl Esters and Sodium and Ammonium Salts. By F. Tattersfield and C. T. Gimingham (*Ann. App. Biol.*, vol. xiv. No. 3, August 1927, pp. 331-358).—The toxicities of the fatty acids from formic to stearic and the sodium and ammonium salts and methyl esters to *Aphis rumicis* L. have been determined quantitatively. The toxicity of the acids rises with an increase in molecular weight as the series is ascended from acetic to undecylic acid. Beyond the last mentioned acid there is a fall in toxicity.

The sodium and ammonium salts are less toxic than the corresponding acids, but the differences are much less in the case of the former salts.

The fatty acids at concentrations lower than 2 per cent. do not show marked toxicity to the eggs of *Selenia tetralunaria* Hüfn.

A discussion on the possible relationships between certain physical properties of the fatty acids and their insecticidal action is included.

The results are set out in six tables and nine diagrams.—G. F. W.

Insects, On the Control of Glasshouse: with Calcium Cyanide. By H. W. Miles (*Ann. App. Biol.*, vol. xiv. No. 2, May 1927, pp. 240-246).—A large number of fumigations with Calcium cyanide (containing 40-50 per cent. Ca(CN)₂) were carried out in glasshouses in various parts of Great Britain under variable conditions.

Various glasshouse plants were used in the work, and the toxicity of the material was tested on one or more of the following pests: "white fly," six species of Aphides and four species of Thrips.

The cost compared favourably with the pot method of generating hydrocyanic acid gas with sodium cyanide and sulphuric acid. A house of 40,000 cu. ft. can be fumigated at the rate of $\frac{1}{2}$ oz. of calcium cyanide to 1,000 cu. ft. at a cost of 1s. 8d. exclusive of labour, which is small.

"White Fly" was held in check with dosages of $\frac{1}{4}$ to $\frac{1}{2}$ oz., and completely controlled with dosages of $\frac{1}{2}$ to $\frac{3}{4}$ oz. per 1,000 cu. ft.

From $\frac{1}{2}$ to $\frac{3}{4}$ oz. per 1,000 cu. ft. controlled the six species of Aphides.

With Thrips, satisfactory control was obtained only with adults, and a series of fumigations using $\frac{1}{2}$ to 1 $\frac{1}{2}$ oz. per 1,000 cu. ft. were necessary to give complete control.—G. F. W.

Iris Corms, Production of Hybrid Palestine. By D. Griffiths and E. O. Orpet (*U.S. Dep. Agr., Tech. Bull.* 11; Nov. 1927; figs.).—An account of the growing of *Regelio-cyclus* Irises in the United States. As in England annual lifting is advised, and it is regarded as important to remove all the dead portions of the old corms.—*F. J. C.*

Kingdon Ward. Ninth Expedition in Asla. (*Gard. Chron.* Jan.—Dec., 1927).—The publication of this series of journeys and discoveries in Burmah commenced in *The Gardeners' Chronicle* for August 28, 1926, and has been continued at irregular intervals. The fifth instalment appeared Jan. 1, and the twenty-second Dec. 31, 1927. The numerous photographs of scenery, people, and plants add great value to this interesting record.—*E. A. B.*

Lilies, Hybrid. By A. Grove (*Gard. Chron.*, Oct. 22, 1927, pp. 328–9–30, with 3 figs.).—A review of the hybrid lilies of gardens. It includes Burbank's Californian forms, *L.L. Parkmannii*, *Dalhousonii*, *Martini*, *Sulphurgale*, and others.—*E. A. B.*

Lilium monadelphum. By A. Grove (*Gard. Chron.*, Sept. 3, 1927, pp. 190–2, with 4 figs.).—A concise account of the varieties, forms, and synonyms of this variable plant.—*E. A. B.*

Lilium Thunbergianum, Hybrid Origin of. By F. Benckmüller (*Gard. Chron.*, March 26, 1927, pp. 216–7).—*L. concolor* fertilized with pollen of *L. dauricum* produced plants indistinguishable from *L. Thunbergianum*.—*E. A. B.*

Mesembryanthemum. By N. E. Brown (*Gard. Chron.*, vols. lxxxi. and lxxxii., 1927, at irregular intervals, in continuation; numerous figures).—This critical revision was commenced in *The Gardeners' Chronicle* in 1922. It was discontinued after p. 124 of vol. lxxii., recommenced Sept. 12, 1925, vol. lxxviii., p. 211, and instalments have appeared at irregular intervals in the four following volumes. The contributions in 1927 consist of eight new sub-genera, a key to these being given on p. 12, Jan. 1. These are *Apatesia*, *Macrocaulon*, *Ectrotropis*, *Scmnanthe*, *Acrodon*, *Odontophorus*, *Zenktophyllum*, and *Malephora*. New species are described in the sub-genera founded by this author—*Conophyllum*, *Lithops*, *Rimeria*, *Muiria*, *Mentocalyx*, *Rhinephyllum*, *Argeta*, and *Fenestraria*, and also in Haworth's sub-genera *Glottiphyllum* and *Gibbaeum*. These are accompanied by excellent photographs of living plants and drawings of leaves.—*E. A. B.*

Naphthalene in the Soil, The Decomposition of; and The Effect upon its Insecticidal Action. By F. Tattersfield (*Ann. App. Biol.*, vol. xv. No. 1, February 1928, pp. 57–80; 1 fig.).—The efficiency of naphthalene as a soil insecticide depends upon its application. When the material is thoroughly incorporated with the soil, it shows a fairly potent toxic action on wireworms, but the effect is considerably reduced when it is unevenly distributed and is due to its low vapour pressure and consequent slow spread.

It was found that it took three or four days to kill wireworms, and the effect of uneven distribution is a repellent one where the insects tend to move away from positions where toxic action would be exerted.

Toxicity disappears more rapidly in soils rich in organic matter than in soils less rich; again, toxicity persists longer in sterile soils and in sand than in unsterilised and in dry than in moist soils.

Subsequent applications of naphthalene to the soil, when the first has disappeared, are decomposed more rapidly than the first dose. Loss of naphthalene from the soil is shown to be mainly due to bacterial decomposition.

Methods of estimating naphthalene are described.—*G. F. W.*

Narcissus Leaves, On an Extraordinary Botrytis causing a Disease of. By W. J. Dowson (*Trans. Brit. Myc. Soc.*, May 1928, pp. 95–102; figs.).—A "fire" disease of *Narcissi* due to an undescribed *Botrytis*, leaves affected becoming blotched with bright yellow, usually near the tips. The central parts of the spots are marked by greyish streaks which subsequently become brown. The fungus, now named *Botrytis polyblastis* Dowson, is characterized by large conidia which produce several germ tubes on germination.—*F. J. C.*

Oenothera Lamarekiana Seringi, was a form of Oe. grandiflora Solander. By B. M. Davis (*Proc. Amer. Phil. Soc.*, 66, 1927, pp. 319–355; plates).—*Oe. Lamarekiana*, as understood by de Vries and in English gardens, the author believes to be of English garden origin and a hybrid, introduced to commerce by Messrs. Carter and named in error by Dr. Lindley. He shows by reference

to extensive herbarium collections in different herbaria and by comparison with original descriptions, that the plant was not known prior to 1860, and is distinct from Seringe's *Oe. Lamarckiana* which he identifies with *Oe. grandiflora* of Solander. He suggests that the name *Oe. Lamarckiana* should be retained for the plant now so widely cultivated but that it should be understood to be the one described and used in his experiments by de Vries, not that named by Seringe, which was in cultivation in the early years of the nineteenth century and is at present little grown in England, where the hybrid *Oe. Lamarckiana* has ousted the older *Oe. biennis* from cultivation and is naturalized here and there in this country.—F. J. C.

Pear Scald and Breakdown The occurrence of Acetaldehyde in Bartlett Pears and its relation to. By C. P. Harley and D. F. Fisher (*Jour. Agr. Res.*, vol. xxxv, No. 11, Dec. 1927).—The authors consider the scald and breakdown in pear flesh as well as the disagreeable taste and odour preceding and accompanying the scald to be due to the formation of acetaldehyde. The production of acetaldehyde is the result of metabolic processes and is not necessarily due to postmortem changes.—F. J. C.

Pisum, Length Factors in. By H. de Haan (*Genetica*, ix. pp. 481-498, 1927).—On crossing two dwarf peas, all the F_1 generation was dwarf, but aberrant individuals appeared in F_2 , reaching a height of 9 or 10 feet, without branches, of slender build, and with long flowerstalks. The petals of the keel did not coalesce; many pods were seedless and most produced a smaller number of seeds than is normal.

Rasmusson has described similar slender types.

The author shows the aberration to be due to the possession of two multiple factors which he designates La and Lb, and which like the usual factor for length (Le) can be transmitted independently. La and Lb are recessive in the slender forms and are to be regarded as factors inhibiting growth in length.—F. J. C.

Plum Pollination. (Pollinering och fruktsättning hos plommonsorтер). By E. H. Florin (*Contr. from Swed. Perm. Com. on Orch. Res.* No. 12, 1927).—Tests of pollen germination show that usually much pollen is fertile, frequently 70 per cent., and only in 'Duke of Edinburgh,' 'First,' 'Golden Japan,' and 'Lawrence' did less than 20 per cent. germinate. In Sweden 'Belle de Louvain,' 'Czar,' 'Prune from Experimentalfältet,' 'Reine Claude d'Oullins,' and 'Victoria,' have proved self-fertile. 'Belgian Purple' is self-fertile, but the crop is increased by pollination with 'Reine Claude d'Oullins' and 'Victoria.' 'Allmänna gulplommon,' 'Drap d'Or d'Esperen,' 'de Montfort,' 'Hackman,' 'Jefferson,' 'Kejsarplommon, rott,' 'Kirke,' 'Lawrence,' 'Reine Claude,' 'Reine Claude d'Althann,' 'Reine Claude noire,' 'Rivers' Early Prolific,' 'Washington,' have proved self-fertile, the first two being devoid of stamens. 'Drap d'Or d'Esperen' gave a good crop when pollinated by 'Reine Claude d'Oullins,' and 'Allmänna gulplommon' when pollinated by 'Hackman' and 'Jefferson.' 'Hackman' set satisfactorily with 'Czar,' 'de Montfort,' 'Prune from Experimentalfältet,' 'Reine Claude,' 'Reine Claude d'Oullins,' and 'Victoria.' 'Jefferson' has set only with 'Victoria,' and 'Victoria' pollen produces a good crop with 'Kirke,' 'Reine Claude,' 'Reine Claude d'Althann,' and 'Reine Claude noire.' 'Kirke' is fertile with 'Belgian Purple,' 'Reine Claude d'Althann' with 'Reine Claude d'Oullins.' 'Reine Claude' sets with 'Hackman,' 'Reine Claude d'Althann,' 'Reine Claude d'Oullins,' and 'Victoria.' F. J. C.

Plums, Varietal Characteristics of, in relation to Pruning. By C. F. Kinman (*U.S. Dep. Agr., Dept. Bull.* 1477; Oct. 1927; plates).—The pruning of plums is discussed in the light of conditions of soil and climate prevailing in the Western States of America. Both Japanese plums and varieties of *Prunus domestica* are dealt with and illustrated, and the behaviour of plums under Eastern and Western conditions is compared, on the whole pointing to a greater development of spurs under irrigation conditions. The varieties dealt with are: (1) of Japanese: 'Beauty,' 'Burbank,' 'Climax,' 'Daarte,' 'Formosa,' 'Gaviota,' 'Kelsey,' 'Santa Rosa,' 'Satsuma,' 'Wickson'; (2) of *domestica*: 'Agen,' 'California Blue,' 'Clyman,' 'Diamond,' 'Giant,' 'Golden Drop,' 'Grand Duke,' 'Imperial Epineuse,' 'Italian Prune,' 'Jefferson,' 'Peach,' 'Pond,' 'President,' 'Reine Claude,' 'Sergeant,' 'Sugar,' 'Tragedy,' 'Washington,' 'Yellow Egg,' 'Burton,' 'Sweetheart,' 'Becky Smith.'—F. J. C.

Potato, Bud Variations in, and their Chimerical Nature. By T. Asseyera (*Jour. Gen.* 19, pp. 1-26; figs.).—Discusses bud variations which are said to

be not uncommon, and which may be gain or loss variations, and may give rise to monstrous forms. All those investigated were periclinal chimaeras. Proof of the chimerical nature of the variations is provided by the failure of buds from the deeper layers to reproduce the mutation, and by the fact that the mutation is not reproduced by seed.—F. J. C.

Potato Leafroll Disease, Physiological Investigations in relation to the Virus of. By Dr. I. H. Thung (*Tidschrift over Plantenziekten*, 1928).—The author concludes as a result of his experiments that the balance of evidence is in favour of the idea that the accumulation of starch which occurs in potato foliage as a result of the attacks of virus diseases is due to interference with transport rather than to disturbed enzymatic processes. His observations lead him to conclude that the virus is a living organism.—F. J. C.

Prunus, Studies of. By C. D. Darlington (*Jour. Gen.* 19, Jan. 1928; pp. 213-256; figs.).—It was found that the maturation periods in different species of *Prunus* varied widely. In some it occurred in December, in others not until April. The hybrids may be extremely different from their parents in this respect.

The basic chromosome number in *Prunus* is eight, and there are species with 2, 4 and 6 times this number. The history, origin and morphological relations of the domestic Cherries and the wild species are discussed in the light of their chromosome relations, and incidentally confusion regarding the origin of the Cherries raised by Mr. T. A. Knight is resolved.—F. J. C.

Raspberry, A Gloeosporium Blight of. By B. O. Dodge (*Phytopathology*, 17, pp. 769-774; figs; Nov. 1927).—The attack causes blackening of leaf stalks, collapse of leaves and bluing of tips of shoots. Young canes may turn blue or purple, the discoloration passing from apex to base of stem, thus differentiating it from the "raspberry wilt." The fungus *Gloeosporium cingulatum* has been found associated with the disease, and evidence is adduced that the fungus finds its way into the plant through injured areas.—F. J. C.

Red Spider, On the Control of: By Means of Naphthalene Vaporised over a Spirit Lamp. By T. Parker (*Ann. App. Biol.*, vol. xv. No. 1, February 1928, pp. 81-89; 1 fig.).—An account is given of the method of vaporising No. 16 Naphthalene by means of a lamp for the control of "red spider" (*Tetranychus telarius* L.) on glasshouse plants.

The special type of lamp used in the fumigations is described and figured.

Trial fumigations with carnations, cucumbers and tomatoes are described in detail. Tables are given showing data of dose, periods of fumigation, concentrations per 1,000 cu. ft., temperature and relative humidity figures. A concentration of 6-8 oz. per 1,000 cu. ft. has been successful against red spider on vines, cucumbers, arums, smilax, *Asparagus sprengeri* and *A. plumosus nanus* without deleterious effects.

The cost of fumigating 1,000 cu. ft., exclusive of time, labour and lamps, is 1s. 4d. The lamps costs 14s. each (wholesale price).—G. F. W.

Rhododendrons and Lime. By A. Grove (*Gard. Chron.*, Nov. 26, 1927, pp. 426-7-8; 1 fig.).—An account of an experiment carried on for 7 years to ascertain the effect of a chalky soil on young plants of *Rhododendron*. Many Himalayan and Japanese species succumbed early. A few Western Chinese species lingered, making little growth. Others, especially those related to *R. Augustini*, flourished.—E. A. B.

Spray Fluids, The Correct Time for Application of. By H. R. Britton-Jones and A. H. Lees (*Jour. Min. Agric.*, vol. xxxiv. No. 9, December 1927, pp. 814-817; 23 figs.).—In order to control pests and diseases of fruit trees more successfully, it has been found necessary to define more clearly the time of application of insecticides and fungicides.

The various stages in the development of the plants are defined as follows: dormant, swelling, bursting, burst, green flower and pre-flowering or pink.

Notes are given which, together with a series of excellent photographs, provide a ready means of ascertaining the correct time for applying the various washes at different stages in the development of the following fruits—apple, black currant, cherry, gooseberry, peach, pear and plum.—G. F. W.

Sprayer, A Survey of Some Emulsion Problems confronting the. By R. M. Woodman (*Jour. Pomology*, vol. vi. No. 4, Feb. 1928, pp. 313-318).—A survey of the troubles arising in the preparation of oil sprays. The use of mineral oils as insecticides, ovicides and cleansing washes has become widespread during

recent years. The two types of emulsion—oil-in-water and water-in-oil—are explained, and it is the former type which represents true dilution of the toxic constituent of the spray emulsion.

It is demonstrated that the mechanical treatment given during preparation determines the type formed.

A detailed explanation is given of the influence of hard waters on the emulsion type. Although soaps and resins are probably the most efficient wetters and spreaders and emulsifiers with miscible oils, the use of other emulsifiers, e.g. sodium and calcium caseinates, gelatine, saponin, etc. are recommended as emulsifiers with hard waters.

It is urged that the manufacturers of proprietary oil sprays should sell two types: (i) a miscible oil for use with soft water, and (ii) the toxic oil used in the manufacture of the miscible oil made up as a stock solution with a non-reactive emulsifier for very hard waters.—G. F. W.

Strawberries, The Endotrophic Mycorrhiza of. By D. G. O'Brien and E. J. McNaughton (*Res. Bull., W. Scot. Agr. Coll.*, No. 1, January 1928; plates).—The authors find the roots of strawberries from a great number of places contain a fungus which they regard as parasitic and the cause of the many troubles to which strawberries have of recent years been subject. They believe that infection of new plants results from growing too long near old and diseased ones. The fungus which invades the tissues is of the usual mycorrhizal type and has so far not been found in fruit, nor has it been identified.—F. J. C.

Strawberry Aphid on the Strawberry Plant, The Effect of. By H. R. Briton-Jones and L. N. Staniland (*Jour. Pomology*, vol. vi. No. 2, June 1927, pp. 128-136; 5 plates).—An extensive survey was carried out of strawberry plants infested with aphides in order to ascertain the various symptoms of attack.

An historical survey of the various species of Aphides which attack the strawberry plant is given.

One species (*Capitophorus fragariae* Theob.) was used in the experiments, which were carried out both in the field and in the laboratory. The detailed life history of this species is still unknown.

The effect of aphid attack on roots, leaves and flowers is minutely described and figured.

It is shown that, as far as this species is concerned, the virus disease which sets up a condition in plants conveniently known as "strawberry yellows" is not connected with aphid attack.

Control measures include: (i) the thorough washing of runners before they are planted in autumn in a nicotine-soap wash, containing 0.05 per cent. of 68 per cent. nicotine and 1 per cent. soft soap, and (ii) careful selection of runners from healthy aphid-free plants.—G. F. W.

Strawberry, Studies of the Physiological Anatomy of. By P. R. White (*Jour. Agr. Res.* 35, pp. 481-492; figs.; Sept. 1927).—This is a preliminary study of the anatomical structure of two varieties of strawberries of garden origin. The differences between the two types of root met with in the strawberry are particularly dealt with.—F. J. C.

Tar-Distillate Washes, Further Experiments with. By A. H. Lees and L. N. Staniland (*Jour. Min. Agric.*, vol. xxxiv. No. 10, January 1928, pp. 923-931; 14 figs.).—The paper is divided into three parts. The first part deals with the results of spraying apples with "Mortegg" and "Carbokrimp" at strengths of 4, 8 and 10 per cent. against the eggs of *Psylla*, aphid, Tortrix moths, winter moth and capsid bug. Whereas apple sucker and aphid were effectively controlled by all three strengths, a 10 per cent. strength of both washes was necessary to give a satisfactory control of caterpillar and capsid bug.

The second part deals with the effect of rain following the application of tar-distillate washes. A lowering of effectiveness occurs if rain follows as late as twenty-four hours after application. There is room for improvement in these washes in order to provide greater resistance to washing by rain.

The last part deals with the time of application necessary to avoid bud damage on plums and black currants. "Carbokrimp" at 8 per cent. was applied to one tree each of four varieties on a date in January, four dates in February and one date in March. Photographic records of the state of the buds at the time of spraying were made and are published. It is shown that the calendar date affords no safe guide for the time of spraying. The condition of the buds as judged by the eye also fails in this respect, so that some other method applicable in the field is necessary.

One variety of black currant ("Seabrook's Black") was used for ascertaining the correct time for the application of a 10 per cent. strength of "Carbokrimp." This variety showed considerable resistance to a tar-distillate wash and the time at which the wash becomes dangerous was after the buds had already swollen distinctly.—G. F. W.

Tomato Plants, Ultimate Effect of Hardening. By J. W. Crist (*U.S. Exp. Sta., Michigan, Tech. Bull.* 89; Apr. 1928; figs.).—Experiments were devised to ascertain the effect of checking growth and bringing about hardening of the tissues before planting out upon the subsequent yield. It was found to be detrimental to the early fruit production and not to increase the total yield to any material extent.—F. J. C.

Violas, A Revision of. By Lt.-Col. E. Enever Todd (*Gard. Chron.*, vol. lxxxii. March 26, 1927, p. 212, continued pp. 248, 356, 393, 414; vol. lxxxiii. July 9, pp. 28, 127, 228, 244, in continuation).—This critical and masterly revision is intended to supplement, and where needful to correct in the light of recent research, the account of the Violas given in Farrer's *The English Rock Garden*. It is therefore arranged under Farrer's headings and alphabetically, and has reached to *V. nevadensis*.—E. A. B.

Virescence and Proliferation in *Helenium autumnale* and their Cause. By H. de Haan (*Rec. du Trav. Bot. Néerlandais*, xxva. pp. 129-137; 1928; figs.).—Variations similar to those seen frequently in this country are described, and it is pointed out that such variations are usually associated with the growths derived from a single stem. It has been supposed that they were the result of an attack of a *Phytoptus*, and certain structures observed in them have been described as eggs. The author believes these structures to be enlarged plant hairs, and the cause of their development and of the occurrence of virescence still to be obscure.—F. J. C.

Wireworms, Investigations on the Control of. By H. W. Miles and F. R. Petherbridge (*Ann. App. Biol.*, vol. xiv. No. 3, August 1927, pp. 359-387; 2 plates).—The paper is divided into four parts, viz.: (I) the wireworm problem including an historical survey, observations on wireworm attack, feeding habits of wireworms in relation to weeds and seasonal movements of wireworms; (II) baiting as a means of assembling wireworms, including trials in the field and in glasshouses; (III) baiting together with the application of calcium cyanide for wireworm control in the field and under glass and the respective cost of the treatments; and (IV) conclusions and recommendations.

It is shown that besides most farm crops, strawberries, tomatoes and various flowers are particularly susceptible to attack. A census as to the number of wireworms present at the roots of various weeds shows that couch-grass and yarrow attract large numbers, whereas several annual weeds, e.g. *Poa annua*, chickweed and *Chenopodium album*, prove unattractive.

Extensive field experiments were carried out to show the downward migration in spring. The height of activity in the surface soil occurred in September and October and again in March, April and May.

The most successful baits for attracting wireworms from the roots of plants on which they are feeding were wheat, oats and bran, and the operation of baiting is most usefully employed in autumn and spring.

A combination of baits and calcium cyanide dressing at the rate of 2-3 lb. to 100 yards of bait row destroyed 75-100 per cent. of the assembled larvæ.

An attachment to small and large ploughs of an apparatus for applying calcium cyanide to bait rows is described and figured.—G. F. W.

"Wireworms" of the Genus *Agriotes* Esch., On the Life History of. By A. W. Rymer Roberts (*Ann. App. Biol.*, vol. xv. No. 1, February 1928, pp. 90-94; 3 figs.).—The distinguishing characters between the larvæ of *Agriotes obscurus*, *A. lineatus* and *A. sputator* are minutely described.

The most reliable guide to differentiate between the two first mentioned species is the thoracic spiracle, which is figured for each species.—G. F. W.

Woolly Aphis, Studies on the Resistance of Apple to the. By R. Le Pelley (*Jour. Pomology*, vol. vi. No. 3, September 1927, pp. 209-241).—This detailed account of the resistance of apple to *Eriosoma lanigerum* Hausm. is divided into five parts, viz.: (I) Review of former Work; (II) Objects of the Work; (III) Methods and Technique; (IV) Measurement of Resistance; and (V) Experimental Results.

Part I gives a review of the work of various authors and a list of the immune varieties drawn up by them.

Part II mentions the four objects which were held in view during the investigation. They were to test :

1. The resistance of commercial root stocks.
2. The resistance of scion varieties.
3. The interaction of stock and scion.
4. New seedlings (having Northern Spy for one parent) to discover whether the characters of immunity could be transmitted.

Part III describes the methods and technique used in the outdoor and indoor experiments.

Part IV describes the method of measuring differences in degrees of resistance.

Part V is devoted to a description of the experiments carried out on stocks, named varieties and hybrids, the results of which are given in a series of tables. Northern Spy stands out in all cases as being highly resistant to attack.

Amongst eighteen stocks, Crab H (Malling) was the only one which showed marked immunity. Preliminary results show that no high degree of resistance is to be expected among the commercial varieties tested. Beauty of Bath was the most susceptible.

No definite results were obtained to show that there is any interaction between stock and scion.

Tests with seedlings derived from crossing Northern Spy with susceptible varieties have shown that the factors which determine immunity are inherited.

G. F. W.

Wound Periderm Formation in the Potato as affected by Temperature and Humidity. By E. Artschwager (*Jour. Agr. Res.*, vol. xxxv, No. 11, Dec. 1927).—Suberization takes place first and is followed by periderm formation. The latter was not seen to occur below 7° C. and there was a gradual shortening of the period required (9 or 10 days at 7° C.) with a rise of temperature until at 21° C. periderm cells appeared after one day. An increase of humidity hastens periderm formation at low temperatures.—F. J. C.

EXTRACTS FROM THE PROCEEDINGS

OF THE

ROYAL HORTICULTURAL SOCIETY.

GENERAL MEETING.

JANUARY 11, 1927.

The Rt. Hon. The LORD LAMBOURNE, P.C., G.C.V.O., V.M.H., in the Chair.

One hundred and seventy-one Fellows and five Associates were elected, and seven Societies affiliated.

GENERAL MEETING.

JANUARY 25, 1927.

Mr. J. C. FRYER in the Chair.

One hundred and sixty-six Fellows and twelve Associates were elected, and four Societies affiliated.

A lecture on "Insect Pests" was given by Mr. G. F. Wilson, F.E.S., N.D.H. (see vol. 52, p. 235).

ANNUAL GENERAL MEETING.

FEBRUARY 8, 1927.

The Rt. Hon. The LORD LAMBOURNE, P.C., G.C.V.O., V.M.H. (President),
in the Chair.

The Minutes of the last Annual General Meeting, having been circulated, were taken as read, adopted and signed.

One hundred and seventy-two Fellows and seven Associates were elected, and three Societies were affiliated.

The President moved the adoption of the Annual Report of the Council (see p. iv) which had been circulated. He hoped that all present would be able to meet him next year in the New Hall, which was making satisfactory progress. The Society had had another successful year and the number of Fellows and Associates had increased to over 23,000. This progress was a marked feature of the present time, showing the increased interest in horticulture, and it was the business of this, the greatest horticultural Society in the world to stimulate and assist this progress in every possible way.

The Society had suffered the loss of some very good friends, amongst them Sir George Holford, Professor Bateson, the Rev. J. Jacob, Mr. Bennett-Poë, and many other keen gardeners. He drew particular attention to the alteration of the dates and times of the opening of Chelsea Flower Show, which it was hoped would relieve the overcrowding. He also drew particular attention to the work of the Society at its Gardens at Wisley. In conclusion, he expressed the Society's thanks to the retiring members of the Council.

ii PROCEEDINGS OF THE ROYAL HORTICULTURAL SOCIETY.

Sir William Lawrence (Treasurer) seconded the adoption of the Report, and made a statement upon the financial position of the Society, which was satisfactory.

Having invited questions, the President then put the motion, which was carried unanimously.

The following nominations had been circulated to all Fellows in accordance with Bye-law 74, and as the number of names proposed did not exceed the number of vacancies the President declared all the nominees to be duly elected.

<i>As President.</i>	<i>Proposed by</i>	<i>Seconded by</i>
The Rt. Hon. The Lord Lambourne, P.C., G.C.V.O.	Sir William Lawrence, Bt.	Mr. W. A. Bilney.

<i>As Treasurer.</i>		
Sir William Lawrence, Bt.	Mr. C. G. A. Nix.	Mr. Wm. Cuthbertson.

<i>As Members of Council.</i>		
Mr. C. T. Musgrave, V.M.H.	Dr. A. W. Hill.	Mr. E. A. Bunyard.
Mr. Leonard G. Sutton, F.L.S.	Mr. Wm. Cuthbertson.	Sir William Lawrence, Bt.
Mr. R. D. Trotter.	Mr. Mark Fenwick.	Mr. C. G. A. Nix.

<i>As Vice-Presidents.</i>		
The Duke of Bedford, K.G., F.R.S.	The Rt. Hon. The Lord Lambourne.	Sir William Lawrence, Bt.
The Duke of Portland, K.G., P.C., G.C.V.O.		
The Viscount Ullswater, G.C.B.		
Sir James Knott, Bt.		
Sir John T. D. Llewelyn, Bt., D.L., J.P., F.L.S., V.M.H.		
The Rt. Hon. Sir Herbert Maxwell, Bt., P.C., D.C.L., LL.D., F.R.S., V.M.H.		
Sir Daniel Morris, K.C.M.G., J.P., D.Sc., D.C.L., F.L.S., V.M.H.		
Lt.-Col. Sir David Prain, C.M.G., C.I.E., F.R.S., F.L.S., V.M.H.		
The Hon. Vicary Gibbs, V.M.H.		
Mr. E. A. Bowles, M.A., F.L.S., F.E.S., V.M.H.		
Mr. J. C. Williams.		

<i>As Secretary.</i>		
Mr. F. R. Durham, C.B.E., M.C.	Sir William Lawrence, Bt.	Mr. W. R. Oldham.

<i>As Auditor.</i>		
Mr. Alfred C. Harper.	Mr. W. A. Bilney.	Mr. C. G. A. Nix.

The following presentations were made :

Victoria Medal of Honour.—To Mr. H. G. Alexander, orchid grower to the late Sir George Holford ; Mr. R. L. Harrow, the curator of the Edinburgh Botanic Gardens ; Mr. C. T. Musgrave, a keen amateur gardener ; Mr. W. W. Pettigrew, chief officer of the Manchester parks ; Prof. F. V. Theobald, the entomologist ; Mr. W. E. Wallace, the carnation grower ; Mr. A. Watkins, the seedsman.

Lawrence Medal.—To Messrs. R. H. Bath, Ltd., for their exhibit of daffodils on April 7, 1926.

Veitch Memorial Medals.—Gold Medal to Mr. George Forrest, V.M.H., for his explorations and introductions ; Gold Medal to Mr. H. B. May, V.M.H., for his general services to horticulture ; Gold Medal to Mr. James Hudson, V.M.H., for his general services to horticulture ; Gold Medal to Rev. G. H. Engleheart, M.A., V.M.H., for his work on daffodils ; Silver Medal and £25 to Mr. W. Camp, late foreman to Messrs. Rivers & Son ; Silver Medal and £25 for botanical draughtsmanship to Miss Matilda Smith, who unfortunately died in December last.

The Cory Cup had been awarded to Mr. F. Howard, of Los Angeles, California, for the bigeneric hybrid *Crinodonnax memoria-Corsii*, which was judged to be the best new hardy plant of garden origin shown to the Society in the course of the year.

The Loder Rhododendron Cup.—To Mr. Lionel de Rothschild for the work he has done in furthering all movements concerned with the introduction and cultivation of rhododendrons.

The George Moore Medal.—To Mr. G. F. Moore, of Bourton-on-the-Water, for his *Cypripedium* 'Sir Trevor,' which was considered to be the best *Cypripedium* shown to the Society in 1926.

The Sander Medal.—To Baron Bruno Schröder for his *Brassolaeliocattleya* 'Margery,' which was considered to be the best greenhouse novelty shown to the Society during 1926.

Proposal that the Society should abandon Rose Trials.—Mr. Robert Fife asked for information as to the progress of the Rose Trials at Wisley, and, considering the answer not satisfactory, moved :

"That the special trial of Roses now being conducted at Wisley be abandoned."

A discussion followed, in which Mr. Charrington, Mr. Easlea and Mr. Wallace took part, and further reply was made on behalf of the Society by Mr. Chittenden. The President assured Mr. Fife that the matter was receiving the earnest consideration of the Council, and the motion was not pressed.

The Meeting concluded with a vote of thanks to the President, proposed by Mr. Leonard Sutton and seconded by Mr. Trotter.

REPORT OF THE COUNCIL FOR THE YEAR 1926.

1. The Year 1926.—It is with pleasure that the Council can again report on the increased prosperity of the Society: During the period under review the number of Fellows and Associates has increased by over fourteen hundred.

2. **Obituary.**—Horticulture in general, and the Society in particular, have lost a very great friend in the death of Sir George Holford, one of the Vice-Presidents. For many years he was a Member of the Council, and while latterly he was unable to take so active a part in the Society's work his interest in it was unabated. He was a great amateur gardener, and Westonbirt is famous for its arboretum, its magnificent collection of orchids, and its unequalled strains of *Amaryllis* and *Lilac*. The splendid exhibits which he frequently sent to the Society's Meetings will long be remembered.

The Society has also lost a valued adviser in William Bateson, F.R.S., Director of the John Innes Horticultural Institution and a Vice-Chairman of the Scientific Committee. He was a scientist of world-wide reputation, and his contributions to the study of plant-breeding and Mendelism were recognized by the bestowal of the Victoria Medal of Honour as long ago as 1901.

Six other Victoria Medallists have passed away during the year, viz.:—
J. T. Bennett-Poe, a Vice-Chairman of the Narcissus and Tulip Committee and a Trustee of the Wisley Gardens; Thomas Coomber, a skilful gardener and fruit grower; S. B. Dicks, the eminent authority upon vegetables; Capt. W. S. Pinwill, who formed a unique collection of rare plants in his famous garden at Trehane; W. Slocock, the veteran nurseryman; and James Whytock, a talented cultivator, formerly gardener at Dalkeith Palace.

Among other friends who are no longer with us must be mentioned W. Allan, Lady Bledisloe, H. N. Ellison, W. Fawcett, E. Hillier, A. G. Jackman, Rev. J. Jacob (the enthusiastic cultivator of bulbs), Samuel McGredy, Miss M. Smith, Thomas Peed, Rev. J. H. Pemberton, G. Reynolds, Sir John Ross, T. W. Sanders, Lieut.-Colonel H. V. Warrender, Miss E. F. Wigram, and H. J. Wright.

3. Numerical Progress.—

LOSS BY DEATH IN 1926.			
Life Fellows	..	..	12
Honorary Fellows	..	..	8
4 Guineas	..	..	1
2 "	..	..	104
1 "	..	..	116
Associates	..	..	4
			<hr/> 245
LOSS BY RESIGNATION, ETC.			
4 Guineas	..	..	5
2 "	..	..	506
1 "	..	..	496
Affiliated Societies	..	..	49
Associates	..	..	55
			<hr/> 1,111
TOTAL LOSS	..	..	<hr/>1,356

FELLOWS ELECTED IN 1926.			
Life Fellows	..	..	31
4 Guineas	..	..	29
2 "	..	..	1,589
1 "	..	..	1,036
Associates	..	..	71
Affiliated Societies	..	..	54
			<hr/> 2,810
Deaths and Resignations	..	..	1,356
			<hr/>
NUMERICAL INCREASE	..	..	1,454
			<hr/>
Total on November 1925	..	..	21,878
Total on November 1926	..	..	23,332

4. **The New Hall.**—The Council accepted the tenders of Messrs. Foster & Dicksee for the construction of the new Hall on August 24, 1926, and building operations commenced immediately. Good progress has been made: the foundations are practically complete and the erection of the large reinforced concrete arches to carry the roof has been started.

The Foundation Stone was laid on October 19 by the President, the Right Hon. Lord Lambourne, P.C., C.V.O., in the presence of the Members of the Council and

a large gathering of Fellows and friends of the Society. A box containing the medals of the Society in silver has been placed in the stone.

The Council expects to have the use of the new Hall in the summer of 1928.

5. Secretary.—In succession to the late Mr. W. R. Dykes the Council has employed *ad interim* Mr. F. R. Durham, C.B.E., M.C., and now recommends his appointment as Secretary.

6. The Fortnightly Meetings.—Throughout the year the Fortnightly Exhibitions have been consistently good, and some of those held during the spring months were particularly fine. The magnificent group of Clivias sent by Sir George Holford on March 23, the exhibits of daffodils staged by Mr. J. L. Richardson on March 23, and by Messrs. R. H. Bath, Ltd. on April 7, and the remarkable collection of vegetables shown by the Hon. Vicary Gibbs on October 19, rank with the best exhibits ever staged at the Hall. It is pleasing to note that the number of exhibitors steadily increases.

The Council wishes to give every facility to those Fellows who, though unable to stage a group, would from time to time like to bring small exhibits of plants with which they have been successful. A special table has therefore been set aside for such exhibits and it is hoped that it will prove to be one of the most interesting features of the meetings.

7. The Daffodil Show.—In spite of the earliness of the season the number of competitive exhibits at the Daffodil Show was much greater than in recent years, and the non-competitive displays were so good that no fewer than four Gold Medals were awarded. For the coming Show the Schedule has been revised and new classes have been introduced which it is hoped will give exhibitors opportunities of demonstrating the decorative value of the daffodil as a cut flower and at the same time make the exhibition more interesting to those who are daffodil lovers but not daffodil specialists.

8. Chelsea Show.—The preparations for the Great Spring Show at Chelsea were attended by unprecedented difficulties. Owing to the general strike the contractors for the tents and the exhibitors of rock and formal gardens were greatly hindered in getting their material delivered, and in the end it became necessary to postpone the Show for a week. Fortunately weather conditions favoured a postponement, and when the exhibition opened it was unanimously declared to be equal, both in magnitude and quality, to anything previously seen at Chelsea. At its meeting on the first day of the Show the Council passed the following resolution and caused a copy of it to be sent to every exhibitor: "The Council desires to place on record its high appreciation of the exhibitors' efforts in maintaining the high standard of Chelsea Show in the most trying circumstances."

A special Art Tent for pictures of plants and gardens was provided, the Commissioners of the Royal Hospital having very kindly allowed the Society to rent an additional piece of land in the Ranelagh Gardens. This innovation, which arose out of a suggestion made by H.M. the Queen, proved popular with both exhibitors and visitors.

In spite of the curtailed railway services and the fact that the exhibition fell in Whit-week, the attendance exceeded all previous records.

9. The Amateur Show.—The first Amateur Show, which was held in 1925, was not quite the success which the Council hoped it would be, but it was decided that the experiment should be repeated in 1926, and the result fully justified the decision. The Amateur Show is now an established feature in the Society's Calendar, and it is hoped that an even larger number of Amateurs will send exhibits to this year's Show, which will be held on June 28.

10. The Vegetable Show.—The Vegetable Show, which was held in conjunction with the Fortnightly Meeting on September 7, was a distinct improvement on the exhibition held in 1925, the competitive exhibits being more numerous and of better quality. There was, however, only one non-competitive collection of vegetables, and it is hoped that in future this Show will receive more support from the great seed houses.

11. The Great Autumn Show.—The applications for space at the Great Autumn Show at Holland Park Hall were so numerous that a much larger building could

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have been filled with exhibits. The standard was good throughout the Show, and the roses were exceptionally fine for the time of year. The Coronation Cup was not awarded.

12. The Fruit Show.—No one who formed his opinion solely from an inspection of the Fruit Show would have imagined that the apple crop was one of the poorest on record, for apples of good quality formed the bulk of the exhibits, which completely filled the Hall. Pears were also well represented, and the exhibits of grapes were better than they have been for some years.

In order to meet the convenience of exhibitors the Show will be held for one day in 1927, and not two as in the past.

13. Special Shows for Soft Fruit and Stone Fruits.—The Council, desirous of encouraging the exhibition of seasonable fruits, has decided to hold a special Show for gooseberries, currants, cherries, etc., on July 19, and a similar Show for apricots, plums, peaches, nectarines, and early apples on August 3. Special schedules will be issued, and the Fellows are particularly asked to assist in making these Shows a success.

14. The Daffodil Conference.—A Conference was held on the second day of the Daffodil Show. In the morning session papers were read and discussions took place on the pests of the daffodil, while in the afternoon the ideals of daffodil raisers were dealt with.

15. Regulations for Exhibitors and Awards.—The Council wishes to draw particular attention to the revised regulations for exhibitors and for the Society's awards and medals which are now published in the "Book of Arrangements."

16. Deputations.—In response to invitations the Council sent Mr. W. Cuthbertson and Mr. T. Hay as a deputation to the Dundee Horticultural Society's Centenary Show, and Sir William Lawrence, Bt., and Mr. E. A. Bunyard to the Show at Valenciennes celebrating the fiftieth anniversary of the Société d'Horticulture et des Jardins Ouvriers de la Région du Nord. These Societies received the deputations in a most cordial and hospitable manner and expressed their appreciation for the awards given and the interest taken in their endeavours.

The Director of Wisley was deputed by the Council to represent the Society at the International Conference on Plant Sterility in New York in August, and at the International Congress of Plant Sciences at Cornell University, at which he acted as Chairman of the Horticultural Section. He also made a tour of Canada and the United States to gain some knowledge of horticulture and horticultural education there, visiting various institutions both in the east and west, and everywhere met with the most cordial reception.

An invitation has been received from the Société Nationale d'Horticulture de France to assist at its centenary celebrations in May, 1927. The Council has accepted and will be represented by a deputation.

17. The Society's Publications.—The publication of Curtis's *Botanical Magazine* is now proceeding with regularity.

The volumes for 1922, 1923, 1924, and 1925 have been published; the volume for 1926 is in preparation and will be issued shortly. The Council wishes to impress upon the Fellows the importance of this publication, and asks them to use their efforts to secure an increased number of subscribers. The earlier volumes from 1845 onwards are obtainable.

The revision of Pritzel's "Iconum Botanicarum Index," the index of plates and illustrations of plants, has after many years of laborious compilation at last reached the stage at which publication can be considered. The Council hopes to be able to make a definite announcement during the coming year.

The compilation of the Library Catalogue, including all books, pamphlets, etc., in the Lindley Library up to 1926, is nearly complete. It will be in the printer's hands shortly. The Council hopes that Fellows requiring copies will give an early intimation of their desires to the Secretary.

A new edition of the "Classified List of Daffodil Names" is being published.

18. The Lindley Library.—During the year about 150 books and pamphlets have been added to the Library, which now contains over 12,000 volumes. Among the new additions which have been purchased are the following:—Britton and Rose's "Cactaceae," Coventry's "Wild Flowers of Kashmir," Thou's

"Crambe," etc., Renealm's "Specimen historiae plantarum," Gobelin's "Le jardinier royal," Brookshaw's "The Horticultural Repository," Sweet's "The Florist's Guide," La Brosse's "Description du jardin royal à Paris," Laborde's "Description des nouveaux jardins de la France et de ses anciens châteaux," Gromort's "Jardins d'Espagne," and Marloth's "The Flora of South Africa."

The Society has been fortunate in regaining possession of ten volumes of exquisitely coloured drawings of fruits and flowers executed by W. Hooker and other artists to the order of the Council of the Horticultural Society during the years 1815-1824.

The Council wishes to thank the Fellows and friends of the Society for their gifts of books, and the publishers for placing at its disposal copies of recent works on horticulture, etc., for Library and review purposes.

19. The Masters Lectures.—These lectures were instituted in 1909 to commemorate that great advocate of "science with practice," Dr. Maxwell T. Masters, F.R.S., F.L.S. Each year some eminent man of science has been invited to lecture before the Society upon recent scientific discoveries and their application to practical horticulture. In 1926 the lectures were given on November 2 and December 14 by Prof. F. O. Bower, M.A., D.Sc., LL.D., F.R.S., taking as his subject "Plants in contrast to Animals."

For the year 1927 Prof. Dr. Ostenfeld of Copenhagen has been invited, and he will give the lectures on June 21 and 22.

20. Conferences.—The Council desires to revive the custom of holding conferences on matters of horticultural and botanical interest, and has decided to arrange for a conference on primulas to take place in 1928 and a conference on rhododendrons in 1929. All Fellows who are interested in these subjects will materially assist the Council if they will come forward at an early date with any particulars they think may be of service to the Society.

The Council has further decided to invite the International Committee for Horticultural Congresses to hold its Congress in London in 1930, being the same year in which the International Botanical Congress will be held in this country.

21. Wisley.—The year 1926 has not been ideal for gardens. A trying winter, wet spring and dry autumn, while it suited many things, left gaps among tender shrubs, ruined all hope of an apple crop, hastened the death of summer blooms, and robbed the autumn of much tinted foliage and beautiful berries.

The number of visitors to the Gardens tends still further to increase. Omnibus services between Kingston-on-Thames and Guildford and the rural omnibuses plying between villages make access to the Gardens easier than when they first came into the Society's possession, and Fellows are making increased use of them. A gratifying feature of the work at the Gardens is the number of visitors who come especially to seek information and to study the trials.

22. Trials.—Trials of main-crop Peas and Potatoes, Savoys, Swedes, Spinach, Celeriac, various annuals, and Gladioli of the *primulinus* section, have been carried out during the year, and Dahlias, Roses, Irises, Aquilegias, Aubrietias, Narcissi, Nerines, Lachenalias, Freesias are still under trial. Reports upon the foregoing trials will be found in the JOURNAL.

The method of trial adopted for Dahlias, Roses, and Irises has proved so successful and the maintenance of standard collections of these plants year after year so interesting to Fellows that the Council has determined to extend it to several other groups of plants, a list of which will be found in the "Book of Arrangements." Collections of these plants will be maintained in the Gardens and new varieties added to them for comparison as they appear, and "awards for garden use" will be made to these plants only after trial at Wisley.

In order to accommodate these standard collections the vegetable trials are in process of removal to a site on the new land at the northern end of the Gardens adjacent to the commercial fruit trials. The tests of fruits for commercial purposes are making good progress, and further varieties of currants and raspberries have been distributed to sub-stations for extended trial. A report upon this work appears in the JOURNAL.

The standard collection of hardy fruits is steadily growing, and the co-operation of Fellows is asked to render this collection as complete as possible. At present cherries, nuts, and to a less extent plums, are represented by a comparatively small proportion of the varieties grown in different parts of the country. Help from Fellows in extending these and other collections of plants in the Gardens will be gratefully accepted.

23. **New Alpine House.**—The desire to cultivate alpine plants appears to increase, and the collection of plants grown in the alpine house at Wisley has proved of great interest to Fellows and has so extended that the house built in 1911 has proved too small. A new house with several improvements and double the size of the old one has therefore been erected and is in use on the hill above the rock garden.

24. **The Garden.**—The renovation of parts of the rock garden has been continued, and some new borders have been made in the flower garden. A fernery is being made along the banks of the stream which flows between Seven Acres and the Pinetum, the site of the old one being required for new rhododendrons, and from the end of this where the stream joins the River Wey a path has been made leading to the rose and fruit trial grounds, following more or less closely the bank of the river. This path, while itself very pleasant, will make more accessible the collection of conifers and the species of roses at the north end of the Gardens. A new tool-shed and mess-room and a new frame have also been added to the equipment of the Gardens. By his skill and experience the newly appointed Keeper has greatly assisted in all this work.

25. **New Plants.**—A considerable number of plants raised from the seed collected by Capt. F. Kingdon Ward have flowered and others are growing on. Part of the surplus was distributed in 1926 and a further number of several thousands is available for 1927. The seedlings raised from the seeds collected by Mr. Comber in Chile are growing on, and while he secured little that is new it is hoped that some of the plants may be of hardier types than have reached us before from the same region.

26. **Expeditions.**—The Society has a share in Capt. Ward's expeditions in Upper Burma and for a further year in Mr. Comber's Chilean expedition, and we hope to receive seeds from both of these in due course. Participation in these expeditions enables the Council not only to assist in introducing new plants to Great Britain, but also to help to make them more widely known by the annual distribution to Fellows.

27. **Distribution of Plants.**—The Council again begs Fellows to take pains to fill up the application form for plants correctly and fully, so as to lighten as far as possible the heavy work which this distribution entails. Several Fellows failed to give their name and address on the application form, and they are doubtless feeling aggrieved because no plants and no communication reached them as a result of sending the form.

28. **Experimental Work.**—As the object of the trials is not merely to enable the best to be picked out, but to classify and describe varieties, the trials are to be regarded as part of the scientific work of the Gardens. In addition to this work investigations involving work in the Laboratory are in continual progress. Dr. Darbishire's investigation of green manuring involves work both in the Laboratory and in the garden; besides this, and some analyses of potato varieties carried out to try to discover whether high starch content is hereditary, he has just concluded, in conjunction with Mr. B. Buxton, some investigations into the colours of certain flowers, especially primroses, and an account of this appears in the JOURNAL. Mr. G. F. Wilson, in addition to much work in comparing the efficacy of sprays against insect pests, many of the results of which are epitomized in the "Awards to Sundries," has finished an enquiry into the life-history of *Othiorhynchus rugifrons*, a beetle which does considerable damage to Saxifrages; he has published an account of tetrachlorethane (a substance now widely used as a fumigant in glasshouses) and its effects upon pests and their host plants; and also an account of long-continued observations and experiments upon insects visiting the flowers of our orchard fruits and pollinating them. He is continuing work upon eelworm attacks on garden plants and upon leaf-mining insects, etc. Mr. Dowson gave an account of the attack of *Sclerotinia* upon narcissi at the Daffodil Conference and is continuing his work upon this and allied fungi which damage bulbs, and he has published in the JOURNAL the results of his investigation of another species of *Sclerotinia* which attacks antirrhinums and other garden plants. He is also continuing his investigation of carnation stem-rot, and a disease of China asters and calceolarias which often kills these plants. He is also experimenting upon a curious bacterial canker of apples which does considerable damage in young orchards and a bacterial blight of dahlias. He has lately given an account of a core rot of apples following an attack of *Sclerotinia*.

fructigena. In addition to his classificatory work with fruit Mr. Rawes is continuing his investigations upon pollination in apples, pears and plums. The main facts of this matter appear to be clear now, but many details remain to be cleared up, and at present every new variety brought into cultivation presents a new problem. It is hoped shortly to publish an account of the results of summer pruning experiments on apples begun by the Director in 1912 and carried out by him and Mr. Rawes since that date. The Director is also preparing an account of some potato-cropping experiments designed to throw light on methods of estimating the cropping power of varieties. Mr. Gould's account of some of the newer primulas under cultivation will shortly appear in the JOURNAL. The addition of the new self-recording wind gauge and new soil thermometers has enabled more complete meteorological records to be kept, for which Mr. W. D. Cartwright is responsible, and a plan for correlating the growth and development of certain crops has been adopted and is being carried out in conjunction with other experiment stations.

An exhibit of some of the experimental work was set up in the Information Tent at Chelsea Show and excited a good deal of interest. The immediate value of the experimental work is, however, perhaps most greatly felt by the power given to answer at first hand the many verbal and postal questions which would otherwise have to remain unanswered.

29. Imperial Fruit Show.—An exhibit of fruit from the Gardens, mainly pears and apples, was set up at the Imperial Fruit Show at Holland Park Hall, less extensive than it might have been in a more favourable year for apples, but sufficient to illustrate the wide range of fruit available for the fruit grower.

30. School of Horticulture.—The School of Horticulture at Wisley is intended to provide a practical training in general horticulture and instruction in the scientific principles underlying the best garden practice. It continues to attract young men seeking a horticultural career, and it leads up to a School Diploma and to the National Diploma in Horticulture. In order to make the instruction more widely available, four scholarships are open to young men from private gardens or nurseries, carrying two years' free tuition and a maintenance allowance of about £80 a year, two being awarded annually. In addition, the Society and the Worshipful Company of Gardeners alternately grant a scholarship of £50 a year for two years, and the Knott scholarship of £30 a year is available each alternate year. The course at Wisley is essentially a practical course, students being expected to take part in all kinds of garden work. Full particulars of the course are contained in the prospectus of the School.

31. Other Work.—The Society's examinations have again been carried out, the practical tests for the National Diploma in Horticulture and the Teachers Honours Examination being held at Wisley.

Considerable numbers of gardeners have been helped to find posts and employers to find gardeners.

The weekly broadcast bulletin of gardening both for the south and for the northern districts has been prepared throughout the year. These weekly messages continue to stimulate numerous enquiries and appear to increase the general public's interest in the Society's work.

The time of the Society's Garden Inspector has been fully employed.

32. The Victoria Medal of Honour.—While regretting the vacancies in the list of holders of the V.M.H., the Council has been pleased to be able to confer this honour on Mr. H. G. Alexander, orchid grower to the late Sir George Holford; Mr. R. L. Harrow, the curator of the Edinburgh Botanic Gardens; Mr. C. T. Musgrave, a keen amateur gardener; Mr. W. W. Pettigrew, chief officer of the Manchester parks; Prof. F. V. Theobald, the entomologist; Mr. W. E. Wallace, the carnation grower; and Mr. A. Watkins, the seedsman.

33. The Lawrence Medal.—The Lawrence Medal for the best exhibit staged at the Society's Shows during the year is awarded to Messrs. R. H. Bath, Ltd., for their exhibit of daffodils on April 7, 1926.

34. The Veitch Memorial Trust.—Awards are made as follows:

Gold Medal—To Mr. George Forrest, V.M.H., for his explorations and introductions.

Gold Medal—To Mr. H. B. May, V.M.H., for his general services to horticulture.

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Gold Medal—To Mr. James Hudson, V.M.H., for his general services to horticulture.

Gold Medal—To Rev. G. H. Engleheart, M.A., V.M.H., for his work on daffodils.

Silver Medal and £25—To Mr. W. Camp, late foreman to Messrs. Rivers & Son.

Silver Medal and £25—To Miss M. Smith, for her botanical draughtsmanship.

The following medals are offered for award in 1927 :

Silver Medal and Bronze Medal—To be awarded at the Centenary Show of the Société Nationale d'Horticulture de France by the deputation of the Council.

A medal for the best exhibit of Irises shown by an amateur at the Iris Society's Show on June 2.

35. The Cory Cup.—The Cory Cup is awarded to Mr. F. Howard, of Los Angeles, California, for the bigeneric hybrid *Crinodonna* × *memoria-Corsii*, which was judged to be the best new hardy plant of garden origin shown to the Society in the course of the year.

36. The Loder Rhododendron Cup.—The Loder Rhododendron Cup is awarded to Mr. Leopold de Rothschild for the work he has done in furthering all movements concerned with the introduction and cultivation of rhododendrons.

37. The George Moore Medal.—The George Moore Medal is awarded to Mr. G. F. Moore, of Bourton-on-the-Water, for his *Cypripedium* × 'Sir Trevor,' which was considered to be the best *Cypripedium* shown to the Society in 1926.

38. The Sander Medal.—The Sander Medal is awarded to Baron Bruno Schröder for his *Brassolaeliocattleya* × 'Margery,' which was considered to be the best greenhouse novelty shown to the Society during 1926.

39. Retiring Members of the Council.—The Council desires to record its appreciation of the services of the three members who automatically retire. They are : Mr. W. A. Bilney, J.P., V.M.H., for his valuable services to the Society during his long association and tenure of office on the Council ; Dr. A. W. Hill, C.M.G., M.A., F.R.S., F.L.S., whose knowledge of science and administration has been so liberally placed at the disposal of the Society ; and Mr. W. Cuthbertson, J.P., V.M.H., for his valuable advice and experience. While their absence from the Council's deliberations is much to be regretted, it is a great satisfaction to know that the Society will continue to have their valuable services on the various committees on which they have consented to remain.

40. The Committees and Judges.—The Society owes a great debt of gratitude to the Members of all its Committees and to its Judges, who give unstintingly of their time to the affairs of the Society. Without their enthusiastic co-operation the Society's work could not be carried on, and the Council desires to place on record its hearty appreciation of the services rendered.

41. The Press.—The Council desires to thank the Press for the publicity which it continues to give to the Society's activities. The goodwill and friendly criticism of the Press provide a valuable stimulus to the Society's work.

42. Further Acknowledgments.—The Council desires to acknowledge very gratefully the generous gift from the President, the Right Hon. Lord Lambourne, P.C., C.V.O., of the portrait of himself which was presented to him by the Fellows of the Society and friends ; the donation by Mr. G. L. Moore, V.M.H., of £250 to provide a gold medal annually for the best new *Cypripedium* ; the legacy of £100 from Miss Wigram, which has been devoted to the Library ; numerous gifts of seeds and plants for the Garden, a full list of which appears in the JOURNAL ; books for the libraries, both at Vincent Square and at Wisley ; valuable help given by the lecturers at Meetings, by writers of articles, reviews and abstracts for the JOURNAL, and by Mr. T. A. Lawrenson and the Rev. J. B. Hall in the preparation of the Northern Broadcasting Bulletin ; great assistance given by Mr. Murray Hornibrook upon the rock garden at Wisley ; a cup from the proprietors of the *Daily Telegraph* and a cup from the proprietors of *Amateur Gardening* for award at the Amateur Show ; a silver cup from the Garden Club for the best exhibit at the Amateur Show in 1927, and a medal from the proprietors of the *Gardeners' Chronicle*.

43. Revision of the Charter and Bye-laws.—The Council is of the opinion that, in view of the immense and steady growth of the Society and its widened sphere of activity the provisions of the Charters of 1809, 1860, and 1899, together with those of the Bye-laws, require amendment and revision, and it has decided to undertake this work during the coming year.

44. The Society's Property.—The Society's property, under the advice of its Surveyor, Mr. Walter M. Epps, F.R.I.B.A., has been kept up in a good state of repair.

45. The Staff.—Finally the Council wishes to thank the members of the Society's Staff, both at Vincent Square and at Wisley, who, throughout the year, have so loyally and diligently carried out their duties.

Signed on behalf of the Council,
LAMBOURNE,
President.

31st December, 1926.

Dr. ANNUAL REVENUE & EXPENDITURE ACCOUNT

To ESTABLISHMENT CHARGES—	£	s.	d.	£	s.	d.	£	s.	d.
Ground Rent—									
New Hall to March, 1926	1,500	0	0						
New Hall, remainder 1926	900	0	0						
Vincent Square, 1926	690	0	0						
				3,090	0	0			
Rates and Taxes				817	10	11			
Water Rate				85	8	7			
Electric Light				352	10	8			
Gas				151	2	6			
Salaries and Wages				5,080	19	11			
Annuities				52	0	0			
Printing and Stationery				1,242	8	7			
Publications				337	14	1			
Postages				802	18	6			
Fuel				130	6	0			
Professional Fees				547	5	9			
Gratuities				16	18	11			
Repairs and Renewals				1,171	11	8			
Miscellaneous Expenses				452	5	11			
							14,391	2	0
„ INSURANCES							147	5	1
„ JOURNAL, PRINTING AND POSTAGE							1,611	4	3
„ BOTANICAL MAGAZINE							389	18	3
„ STAFF PENSIONS				696	10	7			
Less contributed by the Staff, as per scheme				254	0	5			
							442	10	2
„ MEETINGS—									
Spring Meeting (Chelsea), not including Office Expenses				4,697	18	11			
Autumn Meeting (Holland Park)				977	16	5			
Special Autumn Meeting (Fruit Show)				721	1	8			
Expenses, Floral Meetings and Conferences				412	11	5			
Council, Committee and Deputation Expenses				670	19	1			
Painting Certificates				256	7	6			
							7,736	15	0
„ INSPECTION OF GARDENS							404	9	11
„ PRIZES AND MEDALS—									
Awarded at Society's Meetings							1,022	18	1
„ CONTRIBUTION TO LINDLEY LIBRARY—									
Purchase of Books				403	16	9			
Contribution to Expenses as per Trust A/c				137	12	10			
							541	9	7
„ SPECIAL EXPENDITURE—									
Pritzel Revision				363	4	1			
Subscription to Kingdon Ward's Expedition				150	0	0			
Queen Alexandra's Memorial Fund				105	0	0			
Donation Swanley College				105	0	0			
Gardeners' Royal Benevolent Institution				52	10	0			
Royal Gardeners' Orphan Fund				21	0	0			
Wembley Guarantee				31	5	0			
Royal Geographical Society (Geogr. Names)				10	0	0			
Royal College of Arms Patent Fees				121	3	0			
							959	2	1
„ DEPRECIATION—									
Hall Glass Roof, Furniture, and Appliances for Meetings, &c.							409	7	3
„ SCHOLARSHIPS—									
General Scholarship, Wisley				20	13	6			
R.H.S. Working Scholarships				150	0	0			
							170	13	6
„ EXAMINATIONS IN HORTICULTURE—									
Expenses				235	2	2			
Less Fees				184	1	9			
							51	0	5
„ BALANCE carried forward							28,226	1	2
							£56,503	16	9
To WISLEY—									
Capital Expenditure				752	14	4			
Excess of Expenditure over Revenue				8,578	10	3			
							9,331	4	7
„ GENERAL RESERVE FUND							17,000	0	0
„ WEATHER INSURANCE FUND FOR CHELSEA AND OTHER MEETINGS							500	0	0
„ BALANCE, AS PER BALANCE SHEET							1,394	16	7
							£28,226	1	2

FOR YEAR ENDED 31st DECEMBER, 1926.

Cr.

	£	s.	d.	£	s.	d.
By ANNUAL SUBSCRIPTIONS				36,416	6	0
„ ENTRANCE FEES				667	16	0
„ DIVIDENDS AND INTEREST	5,646	5	4			
„ do. do. DAVIS TRUST	51	8	10			
				<hr/>		
				5,697	14	2
„ MEETINGS—						
Spring Meeting	6,766	5	0			
Autumn Meeting	667	19	10			
Takings at Hall Meetings	426	5	3			
				<hr/>		
				7,860	10	1
„ HALL LETTINGS	4,128	4	5			
Less Labour Expenses	526	8	9			
				<hr/>		
				3,601	15	8
„ JOURNALS AND OTHER PUBLICATIONS—						
Advertisements	516	13	3			
Sale of Publications	619	9	8			
				<hr/>		
				1,136	2	11
„ PRIZES AND MEDALS				249	17	5
„ LIFE COMPOSITIONS—						
Being amount paid by Fellows now deceased				210	0	0
„ RENT OF FREEHOLD PROPERTY				260	13	6
„ INSPECTION OF GARDENS				403	1	0

£56,503 16 9

By Balance brought forward 28,226 1 2

£28,226 1 2

Dr. VINCENT SQUARE—BALANCE

VINCENT SQUARE—BALANCE

LIABILITIES.[illegible]

ASSETS.

	£	s.	d.	£	s.	d.	£	s.	d.
By CAPITAL EXPENDITURE—									
„ HALL AND OFFICES—									
As at 31st December, 1925 . . . . .	.	.	.	41,277	13	4			
„ FURNISHING HALL AND OFFICES—									
As at 31st December, 1925 . . . . .	.	2,757	12	1					
Expended during 1926 . . . . .	.	66	17	9					
				2,824	9	10			
„ NEW HALL—									
As at 31st December, 1925 . . . . .	.	150	0	0					
Expended during 1926 . . . . .	.	13,809	19	1					
				13,959	19	1			
							58,062	2	3
„ FREEHOLD PROPERTY, WISLEY—									
As at 31st December, 1925 . . . . .	.	.	.	12,707	7	8			
Add Expenditure during 1926 . . . . .	.	.	.	451	6	1			
							13,158	13	9
„ SUPPLEMENTARY PENSION FUND INVESTMENT									
ACCOUNT . . . . .	.	.	.	.	.	.	100	0	0
„ APPLIANCES FOR MEETINGS . . . . .	.	.	.	.	.	.	366	14	3
„ SUNDRY DEBTORS AND PAYMENTS MADE IN									
ADVANCE . . . . .	.	.	.	.	.	.	1,930	6	0
„ WEATHER INSURANCE FUND INVESTMENT ACCOUNT									
5% War Loan at 31st December, 1925.									
£2,475 15s. 11d. cost				2,442	4	9			
Add Cash for Investment . . . . .	.	.	.	500	0	0			
							2,942	4	9
„ BOTANICAL MAGAZINE STOCK . . . . .	.	.	.	100	0	0			
Sundry Debtors . . . . .	.	.	.	64	9	7			
							164	9	7
„ INVESTMENT OF DEPRECIATION AND RENEWALS									
FUND—									
5% War Loan 1929-47, £4,578 7s. 2d. cost				4,303	12	6			
3½% Conversion Loan, 1961, £1,057 14s. 8d. „				803	11	8			
2½% Plymouth Corporation Redeemable									
Stock, 1918-58, £225 9s. 4d. „				111	6	5			
							5,218	10	7
„ WORKING WATER CO.—									
Deposit in respect of laying water mains from									
Ripley to Wisley Gardens . . . . .	.	.	.	.	.	.	1,260	0	0
„ EDUCATION CHARTS . . . . .	.	.	.	.	.	.	29	9	1
„ INVESTMENTS—									
as per Schedule . . . . .	.	.	.	.	.	.	46,851	13	2
„ GENERAL RESERVE FUND—									
Investments . . . . .	.	30,000	0	0					
Cash on Deposit—Westminster Bank . . . . .	.	3,000	0	0					
National Discount Co. . . . .	.	35,000	0	0					
							68,000	0	0
„ CASH AT BANK . . . . .	.	1,137	6	3					
Less awaiting investment—									
Weather Insurance Fund . . . . .	.	500	0	0					
							637	6	3
							£198,721	9	8

I have audited the books from which the foregoing Accounts are compiled, and certify that they exhibit a true and correct statement of the position of the Society on the 31st December, 1926. In the total of Assets, £198,721 9s. 8d., are included investments and Cash amounting to a total sum of £5,218 10s. 7d., representing depreciation reserves on account of such matters as roof renewal, hall painting, &c., and these funds are not available for the General Purposes of the Society.

ALFRED C. HARPER, F.C.A., Auditor

(HARPER BROS. & FEATHER, Chartered Accountants),

35 GREAT TOWER STREET, LONDON, E.C. 3.

January, 1927.

Dr. WISLEY GARDENS—ANNUAL REVENUE & EXPENDITURE

	£	s.	d.	£	s.	d.
To SALARIES—						
Wisley Gardens and Research Station				4,138	0	0
„ RATES AND TAXES	197	5	9			
„ WATER RATE	72	11	1			
„ INSURANCES	141	3	8			
„ LABOUR	3,953	15	4			
„ GARDEN IMPLEMENTS	67	10	1			
„ LOAM AND MANURE	112	6	5			
„ REPAIRS	365	0	9			
„ FUEL	641	0	10			
„ PROFESSIONAL FEES	4	1	0			
				5,554	14	11
„ MISCELLANEOUS EXPENSES—						
Garden and Farm	1,254	6	7			
Laboratory	22	17	1			
Trees and Shrubs	77	13	2			
				1,354	16	10
„ STAFF PENSIONS	300	0	0			
Less contributed by Staff, as per scheme	150	0	0			
				150	0	0
„ DEPRECIATION—						
Glass Houses, Plant and Materials	718	4	6			
Motors	90	0	0			
				808	4	6
				£12,005	16	3

ACCOUNT FOR YEAR ENDED 31st DECEMBER, 1926.

Cr.

	£	s.	d.
By DIVIDENDS AND INTEREST	1,369	4	9
„ DONATION	1	6	0
„ „ LIBRARY	1	1	0
„ PRODUCE SOLD	933	10	10
„ ANALYSIS FEES	21	15	0
„ STUDENTS' FEES	21	0	0
„ CONTRIBUTION BY MINISTRY OF AGRICULTURE—			
On account of fruit-testing station	1,079	8	5
„ BALANCE, being excess of expenditure over income, carried to Revenue and Expenditure Account, Vincent Square	8,578	10	3

£12,005 16 3

Dr.

WISLEY GARDENS—BALANCE**LIABILITIES.**

	£	s.	d.	£	s.	d.
To CAPITAL FUNDS ACCOUNT—						
As at 31st December, 1925	35,049	17	11			
Add Payments by R.H. Society, 31st December, 1926	752	14	4			
				35,802	12	3
„ ENDOWMENT TRUST FUND				23,342	7	11
(The difference between this fund and the Investment account on the Assets side is due to a change in the Investments which was made in 1921.)						
„ DEPRECIATION AND RENEWALS RESERVE FUND—						
As at 31st December, 1925	5,361	19	3			
Less Expenditure, 1926	500	0	0			
	4,861	19	3			
Added to Fund, 1926	250	0	0			
				5,111	19	3

£64,256 19 5

ASSETS.

	£	s.	d.	£	s.	d.
By DWELLING HOUSES—						
As at 31st December, 1925	5,651	17	4			
„ GLASS HOUSES, RANGES, POTTING SHEDS—						
As at 31st December, 1925	5,202	6	0			
Additions during 1926	717	14	4			
				5,920	0	4
„ LABORATORY—						
As at 31st December, 1925	20,669	13	2			
					32,241	10 10
N.B.—The Hanbury Trust Estate is, under the Trust Deed, vested in the Society only so long as it is in the position to use it as an Experimental Garden. Accordingly the Expenditure on the Estate by the Society is an Asset only so long as the Gardens continue to be used by the Society.						
„ STOCK FUEL					35	0 0
„ MOTOR CARS AND LORRY	364	11	6			
Less Depreciation	90	0	0			
					274	11 6
„ VALUATION OF PLANT AND LOOSE EFFECTS (as taken by Mr. Chittenden)—						
Gardens and Laboratory	1,772	5	0			
Farm	1,261	13	3			
					3,033	18 3
„ LIBRARY					346	4 4
„ INVESTMENT OF DEPRECIATION AND RENEWALS						
RESERVE ACCOUNT—						
5% War Loan, 1929-47	£2,738	10	5	cost	2,637	5 11
3½% War Loan, 1925-28	£395	18	11	„	346	9 0
3½% Conversion Loan, 1961	£515	15	2	„	390	3 0
5% London Cnty. Stk. 1940-60	£785	5	3	„	601	13 6
2½% Met. Cons. Stk. 1919-49	£1,287	9	2	„	602	19 3
2½% Plymouth Cor. Red. Stock, 1918-58	£288	8	10	„	142	1 0
6% Plymouth Cor. Red. Stock, 1940-50	£159	18	4	„	151	12 4
2½% Bristol Cor. Red. Stock, 1957	£795	14	6	„	369	15 3
					5,361	19 3
„ ENDOWMENT TRUST FUND INVESTMENTS—						
5% War Loan, 1929-47	£9,350			cost	8,972	7 11
3½% Conversion Loan, 1961	£2,484/4/1			„	2,000	0 0
5% London County Stk., 1940-60	£600			„	505	12 0
3½% London County Cons. Stk.	£135/8/4			„	130	0 0
2½% Met. Cons. Stk., 1919-49	£970			„	499	12 0
6% Ply. Cor. Red. Stk., 1940-50	£30/9/4			„	29	6 4
2½% Ply. Cor. Red. Stk., 1918-58	£400			„	197	1 0
2½% Bristol Cor. Deb. Red. Stk., 1957	£600			„	278	18 6
London & North Eastern Rly. 4% Deb. Stock	£3,500			„	3,535	0 0
Can. Pac. Rly. 4% Per. Cons. Deb. Stk.	£4,632			„	3,890	17 6
Buenos Ayres Gt. S. Rly. 5% Non-Cum. Pf. Sk.	£2,500			„	2,825	0 0
City of Moscow Loan 1912, 4½% Bonds	£6,000			Estd. value	100	0 0
					22,963	15 3
(No interest was received during the year on City of Moscow Loan)						
					£64,256	19 5

I have audited the books from which the foregoing Accounts are compiled, and certify that they exhibit a true and correct statement of the position on the 31st December, 1926.

ALFRED C. HARPER, F.C.A., Auditor

(HARPER BROS. & FEATHER, Chartered Accountants),

35 Great Tower Street, London, E.C. 3.

January, 1927.

Dr.

ALFRED DAVIS

Bequeathed to the Society in 1870 for Annual Prizes

	£	s.	d.	£	s.	d.
To Amount of Fund, 31st December, 1925	946	0	3			

	£	s.	d.			
	946	0	3			
„ Dividends received 1926				51	8	10

WILLIAMS

Raised by Donations in 1891 in Memory of

	£	s.	d.	£	s.	d.
To Amount of Fund, 31st December, 1925	204	2	5			

	£	s.	d.			
	204	2	5			
„ Balance 31st December, 1925				94	4	8
„ Dividends received 1926				7	18	10
				102	3	6

MASTERS

Raised by Donations in 1908 in Memory of Dr. Masters

	£	s.	d.	£	s.	d.
To Amount of Fund, 31st December, 1925	542	17	0			

	£	s.	d.			
	542	17	0			
„ Balance 31st December, 1925				127	19	5
„ Dividends received 1926				20	0	0
				147	19	5

NICHOLSON

Raised by Donations in 1908 in Memory of

	£	s.	d.	£	s.	d.
To Amount of Fund 31st December, 1925	180	14	4			

	£	s.	d.			
	180	14	4			
„ Dividends received 1926				7	8	5

SCHRÖDER

Provided by Royal Horticultural Society in Memory of the late Baron

	£	s.	d.	£	s.	d.
To Amount of Fund, 31st December, 1925	557	14	6			

	£	s.	d.			
	557	14	6			
„ Balance 31st December, 1925				6	6	8
„ Dividends received 1926				20	0	0
				26	6	8

TRUST FUND.

Cr.

or in any other way the Council may determine.

	£	s.	d.	£	s.	d.
By London County 5% Stock, 1940-60, £375	316	0	0			
„ Met. Consd. 2½% do. 1919-40, £610	314	4	0			
„ Plymouth Corpn. 2½% Red. Stk., 1918-58, £200	98	10	6			
„ do. 6% do 1940-50, £32 7 0	31	2	3			
„ Bristol Corpn. 2½% Deb. Stk., 1957, £400	186	3	6			
	<u>946</u>	<u>0</u>	<u>3</u>			
„ Revenue and Expenditure Account				<u>51</u>	<u>8</u>	<u>10</u>

MEMORIAL FUND.

B. S. Williams towards Prizes and Medals.

	£	s.	d.	£	s.	d.
By East India Railway Co. Annuity, Class B £7	168	0	0			
„ New South Wales Government 4% Inscribed Stock, 1942-62, £36 3s. 1d.	36	2	5			
	<u>204</u>	<u>2</u>	<u>5</u>			
„ Medal				2	10	0
„ Balance in hands of R.H. Society				99	13	6
				<u>102</u>	<u>3</u>	<u>6</u>

MEMORIAL FUND.

towards the Provision of one or more Annual Lectures.

	£	s.	d.	£	s.	d.
By London, Midland & Scottish 4% Preference Stock, £250	290	13	6			
„ London, Midland & Scottish 4% Guaranteed Stock	252	3	6			
	<u>542</u>	<u>17</u>	<u>0</u>			
„ Lectures given				20	0	0
„ Balance in hands of R.H. Society				127	19	5
				<u>147</u>	<u>19</u>	<u>5</u>

MEMORIAL FUND.

George Nicholson for Prizes.

	£	s.	d.	£	s.	d.
By Local Loans, 3%, £31 11s. 0d.	20	1	5			
„ Tasmanian Government 4% Inscribed Stock, 1940-50, £162 4s. 5d.	160	12	11			
	<u>180</u>	<u>14</u>	<u>4</u>			
„ Prizes				6	2	0
„ Wisley Laboratory Prize Fund				1	6	5
				<u>7</u>	<u>8</u>	<u>5</u>

PENSION.

Schróder to pay to Gardeners' Royal Benevolent Institution for one Pension.

	£	s.	d.	£	s.	d.
By Great Western Railway 4% Debenture Stock, £500	557	14	6			
„ Gardeners' Royal Benevolent Institution				20	0	0
„ Balance in hands of R.H. Society				6	6	8
				<u>26</u>	<u>6</u>	<u>8</u>

Dr.**LINDLEY LIBRARY**

	£	s.	d.	£	s.	d.
To Amount of Fund, 31st December, 1925	8,593	16	2			
„ Contribution from R.H. Society, 31st December, 1926	403	16	9			
	<u>8,997 12 11</u>					
To Balance 31st December, 1925				10	0	0
„ Dividends and Donations received 1926				46	10	6
„ Legacy				100	0	0
„ Contribution from R.H. Society, 31st December, 1926				137	12	10
				<u>294 3 4</u>		

PRITZEL REVISION

Fund to be raised for the Revision of

	£	s.	d.	£	s.	d.
To Amount of Fund, 31st December, 1925	859	2	2			
„ Contribution by R.H. Society				363	4	1
„ Dividends received 1926				34	3	10
				<u>397 7 11</u>		

SIR JAMES KNOTT

Bequeathed to the Society in 1920 for the purpose

	£	s.	d.	£	s.	d.
To Amount of Fund, 31st December, 1925	600	0	0			
„ Balance, 31st December, 1925				120	0	0
„ Dividends received 1926				30	0	0
				<u>150 0 0</u>		

VEITCH MEMORIAL

For the Encouragement

	£	s.	d.	£	s.	d.
To Amount of Fund, 31st December, 1925	1,673	19	1			
„ Balance in hands of R.H. Society				310	7	8
„ Dividends and Interest received 1926				83	13	11
				<u>394 1 7</u>		

MOORE MEDAL

Presented to the Society in 1926 to provide a medal annually for the best

	£	s.	d.
To Amount presented	250	0	0
	<u>250 0 0</u>		

TRUST.

Cr.

	£	s.	d.	£	s.	d.
By London, Midland & Scottish Railway 4% Preference						
Stock, £1,137	1,458	15	7			
„ Value of Library, 31st December, 1925	7,135	0	7			
„ Purchase of Books, 1926	403	16	9			
	8,997	12	11			
By Librarian's Salary				275	0	0
„ Insurance				9	3	4
„ Balance in hands of R.H. Society				10	0	0
				294	3	4

FUND.

Pritzel's Iconum-Botanicarum Index.

	£	s.	d.	£	s.	d.
By India 2½% Stock, £1,367 13s. 6d.	859	2	2			
„ Expenses of Revision, 1926				397	7	11
				397	7	11

TRUST.

of providing a Scholarship for Wisley Students.

	£	s.	d.	£	s.	d.
By War Loan 5% 1929-47	600	0	0			
„ Cash expended				7	10	0
„ Balance in hands of R.H. Society				142	10	0
				150	0	0

TRUST FUND.

of Horticulture.

	£	s.	d.	£	s.	d.
By Victorian Government 5% Inscribed Stock	1,354	0	1			
„ War Loan, 5% 1929-47	319	19	0			
	1,673	19	1			
„ Amount distributed				60	7	6
„ Balance in hands of R.H. Society				333	14	1
				394	1	7

TRUST FUND.

new Cypridium shown to the R.H. Society during the year.

	£	s.	d.
By Cost of Die, medal and engraving	59	9	6
„ Balance in the hands of R.H. Society, awaiting investment	190	10	6
	250	0	0

SCHEDULE OF INVESTMENTS.

31st December, 1926.

			£	s.	d.
5 % War Loan (1929-1947)	£9,725 5s. 0d.	cost	9,453	2	10
3½ % War Loan (1925-1928)	£5,304 1s. 1d.	„	4,630	13	3
3½ % Conversion Loan (1961)	£6,399 12s. 4d.	„	5,000	0	0
3 % Local Loans	£5,800	„	6,006	16	6
2½ % India Stock	£186 9s. 9d.	„	109	2	2
3½ % Dominion of Canada Registered Stock (1930-1950)	£2,000	„	2,000	0	0
5 % London County Stock (1940-1960)	£2,724 14s. 9d.	„	2,295	16	0
2½ % Metropolitan Consolidated Stock (1919-1949)	£4,462 10s. 10d.	„	2,298	11	9
2½ % Plymouth Corporation Red. Stock (1918-1958)	£786 1s. 10d.	„	386	19	7
6 % Plymouth Corporation Red. Stock (1940-1950)	£551 9s. 0d.	„	522	10	6
2½ % Bristol Corporation Debenture Red. Stock (1957)	£2,704 5s. 6d.	„	1,257	1	3
4½ % Central Argentine Railway, Limited, Consolidated Preference Stock	£2,800	„	2,907	3	6
4 % Central Argentine Railway, Limited, Debenture Stock	£600	„	537	15	10
5 % Havana Terminal Railroad Company Mortgage Debenture Bonds	£8,300	„	8,946	0	0
Mortgage on Freehold	£500	„	500	0	0
			<u>£46,851</u>	<u>13</u>	<u>2</u>

ON ACCOUNT OF GENERAL RESERVE FUND.

			£	s.	d.
5 % War Loan (1929-1947)	£19,837 9s. 6d.	cost	19,951	7	9
3½ % Conversion Loan (1961)	£6,606 17s. 5d.	„	5,049	10	0
London & North Eastern Railway 4 % Debs.,	£5,510	„	4,999	2	3
			<u>£30,000</u>	<u>0</u>	<u>0</u>

GENERAL MEETING.

FEBRUARY 22, 1927.

Mr. W. A. BILNEY, J.P., V.M.H., in the Chair.

One hundred and sixty Fellows and five Associates were elected, and four Societies affiliated.

A lecture on " Bulbs in Bowls " was given by Mr. W. H. Cutbush (see vol. 52, p. 186).

GENERAL MEETING.

MARCH 8, 1927.

Mr. H. B. MAY, V.M.H., in the Chair.

One hundred and forty-three Fellows and three Associates were elected, and three Societies affiliated.

A lecture on " Suggestions to Amateur Exhibitors " was given by Mr. A. J. Cobb (see p. 8)

GENERAL MEETING.

MARCH 22, 1927.

Mr. J. C. WILLIAMS in the Chair.

One hundred and sixty-six Fellows and nine Associates were elected, and seven Societies affiliated.

A lecture on " Rhododendrons of Yunnan and Burma Frontier " was given by Mr. G. Forrest.

GENERAL MEETING.

APRIL 6, 1927.

Mr. R. C. NOTCUTT in the Chair.

One hundred and sixty-eight Fellows and one Associate were elected, and six Societies affiliated.

A lecture on " The Pruning of Shrubs " was given by Mr. A. Osborn.

DAFFODIL SHOW.

APRIL 12 and 13, 1927.

CHIEF AWARDS.

The Peter Barr Memorial Cup.

To Mr. J. T. White.

The Engleheart Cup, for 12 varieties of Daffodils raised by the Exhibitor

To Mr. P. D. Williams.

The Barr Silver Cup, for 36 varieties of Daffodils.

To Mr. J. S. Arkwright.

Silver-gilt Lindley Medal, Class 21.

To Mr. P. D. Williams.

Silver Lindley Medal, Class 21.

To Mr. G. L. Wilson.

Silver-gilt Lindley Medal, Class 24.

To Mr. J. L. Richardson.

GENERAL MEETING.

APRIL 26, 1927.

Mr. W. A. BILNEY, J.P., V.M.H., in the Chair.

Two hundred and seven Fellows and two Associates were elected, and four Societies affiliated.

An account of "Spring Flowers for Small Gardens" was given by Mr. W. H. Divers, V.M.H. (see vol. 52, p. 189).

GENERAL MEETING.

MAY 10, 1927.

Mr. W. CUTHBERTSON, J.P., V.M.H., in the Chair.

Two hundred and twenty-four Fellows and two Associates were elected, and seven Societies affiliated.

A lecture on "An American Horticultural Tour" was given by Mr. F. J. Chittenden, F.L.S., V.M.H.

CHELSEA SHOW.

MAY 25-27, 1927.

Held in the Royal Hospital Gardens, Chelsea.

The following accepted the invitation of the Council to assist in judging the exhibits:

BAKER, G. P.	MCLEOD, J. F.
BAKER, W. G.	MASON, H. T.
BARKER, S.	MAWSON, E. P.
BARNES, N. F., V.M.H.	MAY, H. B., V.M.H.
BEAN, W. J., I.S.O., V.M.H.	METCALFE, A. W.
BECKETT, E., V.M.H.	NERDHAM, C. W.
BEWLEY, W. F., D.Sc.	PAGE, COURTNEY
BILNEY, W. A., J.P., V.M.H.	PATEMAN, T.
BLISS, D.	PILKINGTON, G. L.
BOWLES, E. A., M.A., F.L.S., V.M.H.	PUDDLE, F. C.
CORY, R., F.L.S.	RAMSDEN, Sir JOHN F., Bt.
COUTTS, J.	ROTHSCHILD, LIONEL DE
DARLINGTON, H. R., M.A., F.L.S.	SHILL, J. E.
FINDLAY, R.	SNELLING, Miss L.
GALSWORTHY, F.	STERN, F. C.
GIBBS, Hon. VICARY, V.M.H.	STEVENSON, THOMAS
HALL, Sir A. D., K.C.B., F.R.S.	TAYLOR, T. W.
HARRIS, J.	USHER, W. E.
HARROW, R. L., V.M.H.	WALLACE, W. E., V.M.H.
HUMPHREY, W.	WESTON, J. G.
JAMES, Hon. ROBERT	WHITE, A. E., V.M.H.
JOHNSTON, Major L.	WHITE, A. W.
JORDAN, F.	WILDING, E. H.
LADDS, F.	WILSON, GURNEY, F.L.S.
LUCAS, C. J.	YELD, G., M.A., V.M.H.

LIST OF AWARDS AND CHALLENGE CUPS.

(GIVEN BY THE COUNCIL AFTER CONSULTATION WITH THE JUDGES.)

Sherwood Cup, for the most meritorious exhibit in the Show.

To Mr. G. G. Whitelegg.

Cain Cup, for the best exhibit shown by an Amateur.

To Sir Jeremiah Colman, Bt.

Orchid Challenge Cup, for the best group of orchids in a space not exceeding 60 sq. ft. This competition is open only to those amateurs who employ not more than three assistants in the orchid houses (including the head gardener).

To J. J. Joicey, Esq.

IRISES.

Silver Cup.

To Messrs. Bunyard & Co., Maidstone.

Silver-gilt Banksian Medal.

To Mrs. W. R. Dykes, Worplesdon.

To the Orpington Nurseries Co., Ltd.

SWEET PEAS.

Gold Medal.

To Messrs. R. Bolton & Son.

To Messrs. Dobbie & Co.

Silver Flora Medal.

To Alex. Dickson & Sons, Ltd.

Flora Medal.

To Mr. J. Stevenson.

Banksian Medal.

To Messrs. James Carter & Co.

ORCHIDS.

Gold Medal.

To Messrs. Charlesworth & Co.

To Sir Jeremiah Colman, Bt.

Silver Cup.

To Messrs. H. G. Alexander, Ltd.

To Messrs. J. & A. McBean.

Silver-gilt Flora Medal.

To Messrs. Cowan & Co.

To Messrs. Stuart Low & Co.

To Messrs. Sanders.

Silver-gilt Banksian Medal.

To Messrs. Black & Flory.

To Messrs. Mansell & Hatcher.

To the Exors. of the late H. T. Pitt, Esq.

Silver Flora Medal.

To Messrs. J. Cypher & Sons.

To J. J. Joicey, Esq.

Silver Banksian Medal.

To Messrs. Sutton Bros.

Flora Medal.

To Mr. H. Dixon.

TULIPS.

Silver Cup.

To Messrs. Barr & Sons.

Flora Medal.

To Messrs. Dobbie & Co.

Banksian Medal.

To Major H. F. Fletcher.

FRUIT AND VEGETABLES.

Gold Medal.

To the Hon. Vicary Gibbs, for vegetables.
To Messrs. Sutton & Sons, for vegetables.

Silver Cup.

To Messrs. James Carter & Co., for vegetables.
To Messrs. T. Rivers & Son, Ltd., for fruit trees in pots.
To the Hon. Sir John Ward, for fruit.

Silver-gilt Hogg Medal.

To Messrs. Laxton Bros., for Strawberries.

ROSES.

Silver Cup.

To Messrs. Chaplin Bros., Ltd.

Silver-gilt Flora Medal.

To Messrs. Frank Cant & Co., Ltd.
To Mr. George Prince.

Silver-gilt Banksian Medal.

To Messrs. Ben. R. Cant & Sons, Ltd.
To Messrs. W. Cutbush & Son, Ltd.
To Messrs. W. Easlea & Sons.
To Messrs. Elisha J. Hicks.

Silver Flora Medal.

To Mr. J. H. Pemberton.

Banksian Medal.

To Messrs. E. Paul & Co.

RHODODENDRONS AND AZALEAS.

Silver Cup.

To Messrs. R. & G. Cuthbert, for Azaleas.
To Messrs. J. Waterer, Sons & Crisp, Ltd., for Rhododendrons.

Silver-gilt Banksian Medal.

To Messrs. M. Koster & Sons, for Rhododendrons.

Silver Flora Medal.

To the Exors. of the late Mr. W. C. Slocock, for Rhododendrons.

Banksian Medal.

To Mr. T. Lewis, for Rhododendrons.

MIXED GROUPS.

Gold Medal.

To Messrs. R. Wallace & Co., Ltd., for Lilies and other bulbous plants, Irises, herbaceous plants, and Rhododendrons.

Silver-gilt Flora Medal.

To the Yokohama Nursery Co., for Japanese dwarf trees, miniature gardens, and Kurume Azaleas.

To Mr. Amos Perry, for hardy ferns and herbaceous and bulbous plants.

Silver Flora Medal.

To Messrs. Toogood & Sons, Ltd., for annuals, bulbous Irises and Anemones.
To Messrs. Stuart Low & Co., for Australian and other greenhouse plants.

Flora Medal.

To Messrs. L. J. Endtz & Co., for Azaleas and Hydrangeas.
To Mr. W. H. Walters, for hardy plants.

Banksian Medal.

To Mr. J. C. Allgrove, for shrubs, herbaceous and alpine plants.
To Messrs. Daniels Bros., Ltd., for Roses, Aquilegias, shrubs, etc.
To Mr. G. G. Whitelegg, for shrubs and rock-garden plants.
To Messrs. Lowe & Gibson, for Irises, Lilies, and Border Carnations.

GREENHOUSE PLANTS.

Gold Medal.

To Messrs. James Carter & Co., for Cinerarias, Gloxinias, Petunias, Schizanthus, Calceolarias, Clarkias, and other flowering plants from seed.
To Messrs. Sutton & Sons, for Salpiglossis.

Silver Cup.

To Messrs. Blackmore & Langdon, for Begonias.
To Mr. H. J. Jones, for Hydrangeas.
To Mr. Frank Ladds, for Hydrangeas.
To Messrs. L. R. Russell, Ltd., for tree ferns, stove and greenhouse plants.

Silver-gilt Flora Medal.

To the Lady Aberconway and the Hon. H. D. McLaren, for Hippeastrums and Streptocarpus.

Silver-gilt Banksian Medal.

To Messrs. John Peed & Son, for stove and greenhouse plants.

Silver Flora Medal.

To Baron B. Schröder, for Hydrangeas.
To Mr. S. Smith, for Cacti and succulents.

Silver Banksian Medal.

To Messrs. E. Webb & Sons, Ltd., for Cinerarias, Calceolarias, Schizanthus, Gloxinias, Primulas, and annuals.

Flora Medal.

To Messrs. Ellison, for Ferns and Palms.

Banksian Medal.

To Mrs. M. Denny, for greenhouse plants.
To Mrs. Sheppee, for Calceolarias.

CARNATIONS.

Gold Medal.

To Messrs. C. Engelmann, Ltd., for Carnations.
To Messrs. Allwood Bros., for Carnations and Pinks

Silver-gilt Flora Medal.

To Messrs. Stuart Low & Co., for Carnations.

Silver-gilt Banksian Medal.

To Mr. James Douglas, for Border Carnations

Silver Flora Medal.

To Mr. C. H. Herbert, for Pinks.
To Messrs. K. Luxford & Co., for Carnations.

Silver Banksian Medal.

To Messrs. A. F. Dutton, Ltd., for Carnations

ALPINES.

Silver-gilt Flora Medal.

To Messrs. M. Prichard & Sons, for rock plants.

Silver-gilt Banksian Medal.

To Mr. G. Reuthe, for rock plants.

To Mr. Clarence Elliott, for alpine plants.

Silver Flora Medal.

To Messrs. W. H. Rogers & Son, Ltd., for alpine plants and dwarf shrubs.

To Mr. E. Scaplehorn, for alpine garden plants.

To Mr. W. Wells, Jun., for alpine garden plants.

To Messrs. Tuckers (Oxford), Ltd., for alpine garden plants.

Silver Banksian Medal.

To Messrs. Oliver & Hunter, for alpine plants.

To Messrs. J. Waterer, Sons & Crisp, Ltd., for alpine plants.

Flora Medal.

To the Central Garden Supplies, for alpine plants.

To Mr. F. G. Wood, for alpine plants and dwarf shrubs.

Banksian Medal.

To Messrs. Bakers, Ltd., for alpine plants.

To Mr. W. E. T. Ingwerson, for alpine plants.

To Messrs. Maxwell & Beale, for alpine plants and Primulas.

To Mr. P. Gardner, for alpine plants.

To Messrs. Wm. Wood & Son, Ltd., for alpine plants.

ROCK GARDENS.

Gold Medal.

To Mr. G. G. Whitelegg.

Silver Cup.

To Mr. Herbert Brook.

To Mr. Gavin Jones.

Silver-gilt Flora Medal.

To Mr. Clarence Elliott.

To Messrs. Hodsons, Ltd.

Silver-gilt Banksian Medal.

To Messrs. W. Cutbush & Son, Ltd.

To Messrs. Pulham & Son.

Silver Flora Medal.

To Messrs. W. H. Rogers & Son, Ltd.

SHRUBS.

Silver Cup.

To Messrs. Hillier & Sons, for flowering trees and plants.

To Messrs. G. Jackman & Son, for Clematis.

To Mr. R. C. Notcutt, for hardy shrubs.

Silver-gilt Flora Medal.

To Messrs. W. Fromow & Sons, for Japanese Maples.

To Messrs. Hillier & Sons, for Conifers.

To Mr. G. Reuthe, for shrubs.

To Messrs. A. Charlton & Sons, for shrubs.

Silver-gilt Banksian Medal.

To Messrs. J. Cheal & Sons, Ltd., for shrubs.

To Messrs. L. R. Russell, Ltd., for trees, shrubs, and climbers.

To Messrs. W. Watson & Sons, Ltd., for Brooms.

Silver Flora Medal.

- To Messrs. Fletcher Bros., Ltd., for Conifers, flowering shrubs, etc.
- To Mr. H. Hemsley, for shrubs.
- To Hollamby's Nurseries, for Conifers, and other trees and shrubs.
- To Messrs. R. Gill & Son, for group of shrubs.
- To Messrs. J. Waterer, Sons & Crisp, Ltd., for Conifers and shrubs.

Silver Banksian Medal.

- To Messrs. W. Cutbush & Son, Ltd., for clipped trees.
- To Mr. C. Turner, for Lilacs and other flowering shrubs.

GARDENS.

Gold Medal.

- To Messrs. Bakers, Ltd.

Silver Cup.

- To Messrs. James Carter & Co.
- To Messrs. R. Wallace & Co., Ltd.

Silver-gilt Flora Medal.

- To Messrs. W. H. Gaze & Sons, Ltd.
- To Mr. James MacDonald.
- To Messrs. R. Neal & Sons.
- To Messrs. W. Wood & Son, Ltd.

Silver-gilt Banksian Medal.

- To Messrs. A. Charlton & Sons.
- To Messrs. J. Cheal & Sons, Ltd.
- To Messrs. Pulham & Son.

Silver Flora Medal.

- To Messrs. Vernon Bros.

Silver Banksian Medal.

- To Mr. E. Dixon.
- To the London Gardens.

Flora Medal.

- To the Horsecombe Quarries & Stone Works.

HERBACEOUS PLANTS.

Silver Cup.

- To Messrs. J. Waterer, Sons & Crisp, Ltd., for herbaceous plants.

Silver-gilt Flora Medal.

- To Messrs. Dobbie & Co., for Antirrhinums.

Silver-gilt Banksian Medal.

- To Messrs. Blackmore & Langdon, for Delphiniums.
- To Mr. G. H. Dalrymple, for Lupines and Primulas.

Silver Flora Medal.

- To Messrs. Carter, Page & Co., Ltd., for Dahlias.
- To Mr. G. R. Downer, for Lupines.
- To Messrs. G. Jackman & Son, for herbaceous plants.
- To Messrs. M. Prichard & Sons, for herbaceous plants and Lupines.
- To Mr. Wm. Yandell, for Violas.

Silver Banksian Medal.

- To Messrs. Bakers, Ltd., for herbaceous plants.
- To Messrs. Chaplin Bros., Ltd., for Violas.
- To the Chalk Hill Nurseries, for herbaceous plants.
- To Messrs. Hewitt & Co., Ltd., for Delphiniums.
- To Messrs. Kelway & Son, for herbaceous plants.
- To Messrs. B. Ladhams, Ltd., for hardy plants.

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Flora Medal.

- To Mr. H. Clarke, for Violas.
- To the Maytham Gardens, for herbaceous plants.
- To Messrs. A. J. Allen & Co., for Gaillardias.
- To Messrs. Rich & Co., for herbaceous plants.
- To Mr. Amos Perry, for Poppies.

Banksian Medal.

- To Messrs. J. Cheal & Sons, for Dahlias.
- To Messrs. G. & A. Clark, Ltd., for herbaceous plants.
- To Messrs. E. J. Redgrove & Son, for herbaceous plants.
- To Mr. R. J. Case, for hardy plants.

PAINTINGS, GARDEN PLANS, ETC.

Silver Grenfell Medal.

- To Mr. Percy S. Cane, for plans, photographs, and paintings of gardens.

Bronze Grenfell Medal.

- To Miss E. H. Adie, for water-colour paintings of gardens and flowers.
- To Miss E. Savory, for paintings of flowers.
- To Miss A. L. Spark, for pictures of gardens, flowers and trees.
- To Winifred Walker, for water-colour paintings of flowers.

DEPUTATION TO PARIS.

MAY 25-27, 1927.

A deputation of the Council consisting of Mr. E. A. Bunyard, Dr. A. W. Hill, and Mr. W. R. Oldham, visited Paris for the Show of the Société Nationale d'Horticulture de France, and made the following awards :—

Special Work of Art.

To the Horticultural Union of Aalsmeer, for the contribution of Lilac and Roses to the Holland section.

Gold Medal.

- To MM. Vilmorin, Andrieux et Cie, for their vast and varied display.
- To MM. Croux et Fils, Chatenay, for Rhododendrons.
- To M. Defresne, for Roses.
- To the Exposition Hollandaise.
- To the Exposition Belge.

Silver Flora Medal.

- To MM. C. Maron et Fils, Brunoy, for Orchids.
- To MM. Vacherot et Lecouffe, for Orchids.
- To M. Chantrier, for Caladiums, etc.
- To the Ville du Havre (M. Cayeux, Supt.), for Hydrangeas.
- To the Public Garden of Monte Carlo, for Platyceriums, Pandanus, etc.

Silver Banksian Medal.

- To M. Thiebault, for Cacti.

IRIS SOCIETY'S SHOW.

JUNE 2, 1927.

The Council of the Royal Horticultural Society presented a Veitch Memorial Medal in Silver to Mr. B. R. Long, Richmond, for the best exhibit of Irises by an amateur.

GENERAL MEETING.

JUNE 8, 1927.

Mr. G. P. BAKER in the Chair.

Four hundred and fifty-six Fellows and five Associates were elected, and three Societies affiliated.

A lecture on " Tall Bearded or June Flowering Irises " was given by Mr. G. L. Pilkington (see p. 92).

GENERAL MEETING.

JUNE 21 and 22, 1927.

Dr. A. W. HILL in the Chair.

Forty-four Fellows and one Associate were elected, and one Society affiliated.

The Masters Lectures upon " Hybrids between Species in Flowering Plants " were given by Dr. C. H. Ostenfeld, of Copenhagen (p. 31).

The Peony Cup, presented by Mrs. Edward Harding, was awarded to Mr. W. B. Cranfield.

THE AMATEUR FLOWER SHOW.

JUNE 28, 1927.

CHIEF AWARDS.

Silver Cup, for highest points in Division A.

To Sir William Lawrence, Bt., 30 points.

Silver Cup, for highest points in Division B.

To Mr. G. H. Fisher, 36 points.

Silver Cup, for highest points in Division C.

To Mr. C. Luckin, 36 points.

Garden Club Cup, for the best exhibit.

To Mr. F. W. Franks, for Sweet Peas.

Silver-gilt Banksian Medal.

To Lt.-Col. L. C. R. Messel, for flowering and foliage shrubs.

Medals presented by the National Sweet Pea Society.

Silver-gilt.

To Mr. F. W. Franks.

Silver.

To Mr. W. Huffey.

Bronze.

To Mrs. D. R. Hopkinson.

SCIENTIFIC COMMITTEE.

JANUARY II, 1927.

Sir DAVID PRAIN, F.R.S., in the Chair, and nine other members present.

Variation in Ulmus montana.—Mr. J. Fraser showed specimens and made comments upon the differences in the foliage of forms of *Ulmus montana*, *U. montana laciniata*, *U. montana crispa*, *U. major* (? *U. montana* × *U. nitens*) with the growth form of *crispa* and stool shoots of *U. montana* with very large leaves. Some discussion took place upon the repetition of youthful forms of growth in shoots from cut-back plants and upon dissimilar growth forms from adjacent buds.

Double-spathed Richardia.—Mr. Bernhard sent a good example of *Richardia aethiopica* with two double-spathed spikes.

SCIENTIFIC COMMITTEE, JANUARY 25, 1927.

Mr. E. A. BUNYARD, F.L.S., in the Chair, four other members and Mr. VAN DE WEYER (visitor) present.

Salix purpurea and vars.—Mr. Fraser showed herbarium specimens of *Salix purpurea* and its varieties *Lambertiana* and *Helix*, the latter being always male.

Colchicum sp. from Portugal.—Mr. Van de Weyer showed a *Colchicum* which he had collected wild in Portugal.

Albino flowers.—Mr. Worsley referred to the suggested list of albino plants (see Vol. 52, p. lxxxviii), and said that the list he suggested was one of white forms of plants which normally bear coloured flowers.

SCIENTIFIC COMMITTEE, FEBRUARY 8, 1927.

Mr. E. A. BOWLES, M.A., F.L.S., F.E.S., V.M.H., in the Chair, seven other members and Mr. VAN DE WEYER (visitor) present.

Double Banana.—Mr. Hosking showed a fasciated fruit of banana in which two fruits were coalescent.

Swellings on Beech branches.—Mr. Edwards of the Gardens, Felcourt, East Grinstead, sent a swollen branch of a Beech tree, remarking that the tree bore scores of such swellings while a neighbouring tree was normal. The swollen part was about four inches long and as much through, while the remainder of the branch was about two inches in diameter. The bark was perfectly smooth, showing no trace of adventitious buds, etc.

SCIENTIFIC COMMITTEE, FEBRUARY 22, 1927.

Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, ten other members and Mr. VAN DE WEYER (visitor) present.

Narcissus triandrus × *concolor*.—Mr. Van de Weyer showed this hybrid, which had flowers much like *pulchellus*.

Copper salts in soil.—Dr. Voelcker showed examples of plants damaged by the presence of copper in the soil. They flourished at first, but later became affected. He remarked that zinc produced even worse effects. Dr. Bewley said the copper could be leached out in the presence of lime.

Curious Begonia.—Mr. Cuthbertson sent the half of a *Begonia* corm which appeared to be partly enclosing another. Possibly the small part (which was dead) was originally part of the plant, but after death it had been occluded and at last completely separated from the rest of the plant.

Iris histrioides changing colour.—Mr. G. P. Baker sent a large number of flowers of *Iris histrioides* from his garden at Sevenoaks. At Bexley these plants had borne flowers of a grey-blue colour and now had flowers of a deeper, more intense shade, which he attributed to a difference in soil. At Bexley chalk, and now iron, was the characteristic feature.

SCIENTIFIC COMMITTEE, MARCH 8, 1927.

Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and six other members present.

Hybrid Cinerarias.—Mr. Preston showed the results of crossing the hybrid *Cineraria L'Heritiers* × garden form with a blue *Cineraria*. The progeny showed a range of colours as great as that exhibited by the garden forms, while selfed the hybrid had given neuter flowers only, as shown last year.

Crocus Sieberi var. *versicolor*.—Mr. G. P. Baker showed a pan of collected plants of *Crocus Sieberi* var. *versicolor* which he had collected on Mt. Ida in Crete, where it grows under prickly bushes, where goats cannot reach it. The plants exhibited an extreme range of colouring.

Uncommon plants.—Mr. Hay sent a fruiting branch of *Juniperus utahensis* showing the glaucous bloom upon the berries, and fruits of *Prosopis pullescens* which are tightly twisted in a long, thin spiral.

Rhododendron Mackenzianum, *Farrer's* var. —Mr. L. de Rothschild sent a flowering plant of *R. Mackenzianum* from his garden at Exbury, where it is now flowering for the first time in a cool house. It bears clusters of white flowers tinged on the outside, at the end of branches leafy only near their tips, so that the plant has a gaunt aspect, and it is also unfortunately not hardy.

Male fastigate Yew.—Mr. W. H. B. Fletcher sent branches of both green and variegated forms of fastigate Yew bearing male flowers. They appeared to differ from the Florence Court Yew also in having more curled leafage of a more flaccid type. They had been obtained from the Barnham Nursery Co. near Bognor, but their precise origin is not at present known (see Vol. 52, p. 253).

SCIENTIFIC COMMITTEE, MARCH 22, 1927.

Mr. F. J. HANBURY F.L.S., V.M.H., in the Chair, and four other members present.

Various plants for naming.—Flowers of *Asphodelus acaulis* collected in Algeria, *Tulipa australis* collected in Tunis, and *Romulea ramiflora* from Algeria were sent for naming.

Hybrid Narcissi.—Mr. Arkwright showed a hybrid between *Narcissus juncifolius* and *N. obvallaris* ♀ with small regular flowers which were at first faintly scented.

Polyanthus red flowered.—He also showed a deep red-flowered polyanthus raised from red-flowered parents.

Hybrid Aubrietia × *Arabis*.—He also showed numerous forms believed to have been raised by crossing *Arabis aubrietoides* with garden forms of *Aubrietia*, viz. 'Attraction' and 'Lissadell Pink.' Double flowers and flowers as large as Stocks had been produced, and the matter requires further investigation to see whether in fact crossing has taken place.

SCIENTIFIC COMMITTEE, APRIL 5, 1927.

Mr. E. A. BOWLES, M.A., F.S.L., V.M.H., in the Chair, and ten other members present.

Sex limited variegation.—Mr. A. Worsley remarked upon the variegation of *Aucuba japonica*, which in certain cases he found limited to male seedlings. He promised to bring specimens to the next meeting.

Arabis × *Aubrietia*.—Mr. Arkwright showed a further series of plants raised by the pollination of *Aubrietia* with *Arabis* bearing all the marks of *Aubrietia* but much larger.

Salix seedlings.—Mr. Fraser showed a series of seedlings of *Salix alba*, mainly from N.W. Surrey between the Mole at Esher, and Egham, and *S. fragilis* from S.E. Surrey, the two not occurring together.

Crown gall ? on *Gooseberry*.—He also showed examples of galls resembling crown gall on Gooseberries. These are common, but their origin is not sufficiently known.

Primula hybrids, etc.—Mr. Marsden Jones showed seedlings from the Primrose which bore enations on its petals in previous years. This had been selfed and thirteen seedlings had been obtained, nine of which had so far flowered, all showing similar enations. Crossed with the normal type, all the F₁ progeny is normal. He also showed a series of coloured Primroses from the Tenby district, *P. veris* × *P. Sibthorpii* (which gave a coloured false oxlip somewhat like the polyanthus) and *P. juliae* × *P. elatior*.

SCIENTIFIC COMMITTEE, APRIL 26, 1927.

Sir DAVID PRAIN, F.R.S., V.M.H., in the Chair, and thirteen other members present.

Tellima grandiflora.—Dr. Voelcker showed *Tellima grandiflora*, which he had found growing as an escape from cultivation in Devonshire and which was there called "Balm."

Erigeron uniflorus.—Mr. Hanbury showed on behalf of Dame Alice Godman a plant of *Erigeron uniflorus* raised from seed collected in British Columbia. This is a variable plant with a wide range.

Vegetation in the tropics.—Mr. Hales showed photographs of vegetation in various parts of Southern Asia and remarked upon the surprising rate of growth made by certain plants there.

Tweedia oxypetala coerulea.—This blue-flowered Asclepiad was shown by Sir Wm. Lawrence.

Partial doubling in Polyanthus.—Mr. Hosking showed a *Polyanthus* in which five small outgrowths had developed at the mouth of the corolla opposite the petals, but not with reversed coloration as in similar outgrowths in *Primula sinensis*.

Myosotis aberrant.—Mr. Worsley showed a *Myosotis* in which the first flower to open had up to fourteen corolla lobes. There was some appearance of fasciation in the stems.

Trifolium species.—Mr. J. Fraser showed dried specimens of many of the British species of clover, including the rarer forms. The Committee unanimously thanked Mr. Fraser for the trouble he had taken.

Hippeastrum rutilum.—This species was sent by Major Pam for identification.

Aconitum anglicum.—An early flowering species was also sent for identification.

Sporting Auricula.—Mr. James Douglas showed an interesting sport of a blue-flowered Auricula, one truss of which was distinctly paler than the remainder.

Burragaya x '*Windsor*'.—A hybrid combining four genera—viz. *Cochlidia*, *Oncidium*, *Miltonia* and *Odontoglossum*—was sent by Messrs. Black & Flory, and the Committee recommended that a Certificate of Appreciation should be awarded to Messrs. Black & Flory for their work in raising this hybrid.

Lilium giganteum and *L. giganteum mirabil*.—Mr. Charles Scrase Dickins sent examples illustrating the difference between the species and its variety, the leaves of the latter being much broader than the former.

SCIENTIFIC COMMITTEE, MAY 10, 1927.

Mr. A. D. COTTON, F.L.S., in the Chair, and eight other members present.

Grevillea acanthifolia.—Mr. J. Comber sent this plant from Nymans, Hand-cross. Subject to the verification of the name a Botanical Certificate was recommended. [Mr. Cotton subsequently confirmed the accuracy of the name.]

Aberrant Tulips.—Mr. Arbutnot sent a four-branched Tulip from a fasciated stem and Mr. Roemer one with the parts of the flower in fours.

Hillebrandia sandwicensis.—Mr. Hosking showed an example of this plant, the only representative of the Begoniaceae other than *Begonia*.

Trifolium sp.—Mr. Fraser showed a further series of species of *Trifolium* in continuation of his exhibit at the last meeting, including *T. stellulatum*, *T. striatum* from several sources (Boscombe, Brookwood, etc.), *T. scabrum*, *T. glomeratum*, *T. hybridum* and its variety *elegans*, *T. repens*, and a variety showing phyllody, *T. fragiferum*, *T. resupinatum*, an alien found at Teddlington (which has also occurred at Wisley), *T. procumbens*, *T. minus (dubium)* and *T. filiforme*.

Polyanthus with foliaceous calyx.—A *Polyanthus* with foliaceous calyx was sent.

SCIENTIFIC COMMITTEE, JUNE 8, 1927.

Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and eight other members present.

British species of Allium.—Mr. Fraser showed dried specimens of the following species of *Allium* from their British habitats: *Allium Ampeloprasum*, *A. Babingtonii*, *A. sphaerocephalum*, *A. oleraceum*, *A. Scorodoprasum*, *A. schoenoprasum*, *A. triquetrum*, *A. roseum*, *A. ursinum*.

Chelidonium majus laciniatum.—Mr. Hales showed a very laciniated specimen of *Chelidonium majus* from Chelsea.

Various plants.—Dr. Giuseppe sent a specimen of *Jankaea Heldreichii* collected by himself in Greece. Mr. Worsley showed *Phyllocactus Ackermannii*.

Rhamnus Frangula with *proliferous flowers*.—Mr. N. K. Gould sent *proliferous flowers of Rhamnus Frangula* collected on Wisley Common having foliose petals.

Pelargonium sport.—Mr. Chas. Pearson of Lowham, Notts, sent a specimen of *Pelargonium* showing sporting from root cuttings.

SCIENTIFIC COMMITTEE, JUNE 21, 1927.

Mr. A. WORSLEY in the Chair, and four other members present.

'*Hen and Chickens*' *Marigold*.—Mr. Fraser showed an example of the 'Hen and Chickens' form of French Marigold, which seems to be very prevalent this year. He also showed.

Cones of Pinus Lambertiana and P. Atacamense.

Cnicus Falconeri, a Himalayan species of thistle, was shown by Mr. C. I. Musgrave from his garden.

Rosa Wichuraiana.—A very dwarf form of *Rosa Wichuraiana* which had occurred in a bed of seedlings was shown by Messrs. B. Ladhams, who proposed the name var. *nana* for it.

Plant malformations.—Galls on *Rhododendron ferrugineum* were sent by Miss Jekyll, being caused by *Leobosidium rhododendri*; and from Mr. Cole on Poplar, the result of the attack of *Pemphigus bursarius*. Stems of Phlox and Sweet William were sent by Mrs. Goodenough damaged by the attack of the Phlox eelworm (*tylenchus dipsaci*). A fasciated spadix of *Dracunculus vulgaris* came from Dr. Campfield, and a double Pæony with carpels converted into large petals from Mr. E. M. Holmes.

Bud variation.—Mr. Van de Weyer sent a double flowered yellow *Helianthemum* producing a double red flower from the same shoot.

Albino flowers.—Mr. Fraser sent a list of albinos among plants which he had found to breed true (see JOURNAL, 52, p. lxxxviii). Among wild plants: *Geranium Robertianum*, *Gentiana campestris*, *Linaria cymbalaria*, *Consolida arvensis*, *Oenothera triophylla*; and among garden plants: *Digitalis purpurea*, *Antirrhinum majus*, Sweet Pea, *Campanula Medium*, *Chrysanthemum carinatum* 'Northern Star', *Primula japonica*, *Lavatera trimestris*, *Lobelia Erinus*, Stocks, and China Asters.

FRUIT AND VEGETABLE COMMITTEE.

JANUARY 11, 1927.

Mr. C. G. A. Nix, V.M.H., in the Chair, and twelve other members present.

Awards Recommended :—

Gold Medal.

To Messrs. Sutton, Reading, for vegetables.

Silver-gilt Hogg Medal.

To Messrs. Bunyard, Maidstone, for Apples and Pears.

Other Exhibits.

Hon. Vicary Gibbs, Elstree : Artichoke ' Fuseau.'

Mr. J. W. Boyce, Norfolk : seedling Apple.

Mr. J. S. Peeke, Chumleigh : seedling Apple.

Mr. J. C. Ibell, Stony Stratford : seedling Apple.

Mrs. Wintour, Loose : preserves.

Miss H. G. Sewell, S. Kensington : preserves.

Mrs. Fleming, Uxbridge : preserves.

FRUIT AND VEGETABLE COMMITTEE, JANUARY 25, 1927.

Mr. C. G. A. Nix, V.M.H., in the Chair, and fourteen other members present.

Award Recommended :—

Gold Medal.

To Commendatore Cecil Hanbury, M.P., La Mortola, Italy : for Citrus fruits.

Apple ' Opalescent,' sent by Mr. P. C. M. Veitch, Exeter, was recommended for inclusion in the Commercial Fruit Trials at Wisley.

Other Exhibits.

Mr. W. Taylor, Godalming : Apple ' Connoisseur.'

Col. A. S. Bates, Basingstoke : Oranges.

Mrs. Miller, Marlow : preserves.

Mrs. Fleming, Uxbridge : preserves.

Mrs. Wintour, Loose : preserves.

Miss H. G. Sewell, S. Kensington : preserves.

FRUIT AND VEGETABLE COMMITTEE, FEBRUARY 8, 1927:

Mr. C. G. A. Nix, V.M.H., in the Chair, and seventeen other members present.

Awards Recommended :—

Gold Medal.

To Messrs. Sutton, Reading, for vegetables.

To Messrs. Allgrove, Slough, for Apples and Pears.

Silver-gilt Hogg Medal.

To Messrs. Rivers, Sawbridgeworth, for Oranges.

Other Exhibits.

Messrs. Dobbie, Edinburgh : Potatos.

Mr. P. H. Sherry, Dorchester : Apple ' Sydling Pippin.'

The recommendations made by the sub-committee visiting Wisley to judge the trials of Spinach (see below) and Savoy's (see JOURNAL 52, p. 280) were confirmed.

SPINACH. AUTUMN SOWN.

Award of Merit.

7. 'Schietvrees' (round seeded), sent by Messrs. Nunhem Seed Company
 13. 'Prickly' or 'Winter,' sent by Messrs. Barr.
 46. 'Thick Leaved Round,' sent by Messrs. Burpee.

Highly Commended.

- Much } 1. 'Dwarf Thick Leaved Round,' sent by Messrs. Barr.
 alike } 2. 'Broad Flanders' (round-seeded), sent by Messrs. Barr.
 15. 'Prickly' or 'Winter,' sent by Messrs. Burpee.

Commended.

20. 'Broad Leaved Improved' (prickly), sent by Messrs. Cooper, Taber.

FRUIT AND VEGETABLE COMMITTEE, FEBRUARY 22, 1927.

Mr. J. CHEAL, V.M.H., in the Chair, and sixteen other members present.

No awards were recommended on this occasion.

Exhibits.

Commendatore Cecil Hanbury, La Mortola : Oranges.

Mr. W. Clapson, Bromley : Apple 'Clapson's Greengage Pippin.'

Messrs. Carter, Raynes Park : Seedling Apple (recommended for trial at Wisley).

FRUIT AND VEGETABLE COMMITTEE, MARCH 8, 1927.

Mr. C. G. A. NIX, V.M.H., in the Chair, and fourteen other members present.

No awards were recommended on this occasion.

Exhibits.

Mr. J. Jones, Merioneth : Apple 'William Crump.'

Garden Supplies Ltd., Liverpool : Potato 'Sefton Wonder.'

FRUIT AND VEGETABLE COMMITTEE, MARCH 22, 1927.

Mr. C. G. A. NIX, V.M.H., in the Chair, and nineteen other members present.

No awards were recommended on this occasion.

Exhibit.

The Apple 'King George V,' sent by Messrs. Cheal, Crawley, was recommended for inclusion in the Commercial Fruit Trials at Wisley.

FRUIT AND VEGETABLE COMMITTEE, APRIL 5, 1927.

Mr. C. G. A. NIX, V.M.H., in the Chair, and eleven other members present.

No awards were recommended on this occasion.

Exhibit.

Mr. G. L. Langridge, Athi River, Kenya Colony : Pears 'William's Bon Chrétien' and 'Keiffer Hybrid.' (These formed part of the first importation of Pears from Kenya Colony.)

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FRUIT AND VEGETABLE COMMITTEE, APRIL 26, 1927.

Mr. E. A. BUNYARD in the Chair, and eleven other members present.

No awards were recommended on this occasion.

Exhibit.

Messrs. Dobbie, Edinburgh : Broccoli 'Curtis' Nine-star Perennial,' which was recommended for trial at Wisley.

FRUIT AND VEGETABLE COMMITTEE, MAY 10, 1927.

Mr. A. H. PEARSON, V.M.H., in the Chair, and ten other members present.

Award Recommended :—

Silver Knightian Medal.

To Lord Leconfield, Petworth Park (gr. Mr. Streeter), for Cucumbers.

There were no other exhibits before the Committee on this occasion.

FRUIT AND VEGETABLE COMMITTEE, MAY 25, 1927.

AT CHELSEA SHOW.

Mr. A. H. PEARSON, V.M.H., in the Chair, and eighteen other members present.

No awards were recommended on this occasion.

Exhibit.

Messrs. Bunyard, Maidstone : Cherry 'Chinese Early.'

FRUIT AND VEGETABLE COMMITTEE, JUNE 8, 1927.

Mr. J. CHEAL, V.M.H., in the Chair, and six other members present.

No awards were recommended on this occasion.

Exhibit.

Sir William Lawrence, Bt., Burford : Artichoke 'Gros Camus d'Angers.'

FRUIT AND VEGETABLE COMMITTEE, JUNE 21, 1927.

Mr. C. G. A. NIX, V.M.H., in the Chair, and eighteen other members present.

Awards Recommended :—

Silver-gilt Hogg Medal.

To Messrs. Rivers, Sawbridgeworth : for Peaches and Cherries.

To Lord Leconfield, Petworth Park : for Melons.

Other Exhibit.

Messrs. Laxton, Bedford : Strawberries.

FLORAL COMMITTEE.

JANUARY II, 1927.

Section A.

Mr. H. B. MAY, V.M.H., in the Chair, and nineteen other members present.

Awards Recommended :—

Silver-gilt Banksian Medal.

To Hon. Vicary Gibbs (gr. Mr. E. Beckett), Elstree, for Poinsettias.

Silver Banksian Medal.

To Messrs. Carter, Raynes Park, for Primulas, Hyacinths, and other pot plants.

Banksian Medal.

To Messrs. Allwood, Haywards Heath, for Carnations.

To Messrs. Engelmann, Saffron Walden, for Carnations.

To Messrs. S. Low, Enfield, for Carnations and other greenhouse plants.

Other Exhibits.

Messrs. Bوند, Redhill; *Lachenalia Bوند*, and *Asparagus plumosus Bوند*, A.M., 1925.

Mr. J. J. Kettle, Coife Mullen : Violets.

Section B.

Mr. G. W. E. LODER, M.A.F.L.S., in the Chair, and fifteen other members present.

Awards Recommended :—

Banksian Medal.

To Messrs. Cheal, Crawley, for shrubs and alpine plants.

To Messrs. Cutbush, Barnet, for rock garden and shrubs.

To the Orpington Nursery Co., Orpington, for shrubs.

To Messrs. L. R. Russell, Richmond, for greenhouse plants.

Other Exhibits.

Mr. Klinkert, Richmond : clipped Box and Yew trees.

The Misses Hopkins, Coulsdon : alpine plants.

Messrs. Ballington, Matlock : *Aucuba japonica Ballingtonii*.

FLORAL COMMITTEE, JANUARY 25, 1927.

Section A.

Mr. H. B. MAY, V.M.H., in the Chair, and nineteen other members present.

Awards Recommended :—

Silver-gilt Banksian Medal.

To Messrs. Blackmore & Langdon, Bath, for Cyclamen.

To Messrs. Sutton, Reading, for forced bulbs.

Silver Banksian Medal.

To Messrs. Carter, Raynes Park, for Primulas.

To Mr. J. W. Forsyth, Putteridge, for Cyclamen.

To Messrs. S. Low, Enfield, for Carnations and other greenhouse plants.

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Banksian Medal.

To Messrs. Allwood, Haywards Heath, for Carnations.

To Messrs. Engelmann, Saffron Walden, for Carnations.

Other Exhibits.

The Director of Wisley exhibited plants of *Lachenalia pendula*, *L. pendula superba* and *L. Boundii* from the trial being held at the R.H.S. Gardens, and explained the differences between them. The Committee confirmed the Award of Merit given to *L. Boundii* December 15, 1925.

Sig. Aicardi, San Remo, Italy: Carnations.

Mr. G. Carpenter, Byfleet: Carnation 'Mrs. F. M. Stoop.'

Section B.

Mr. G. W. E. LODER, M.A., F.L.S., in the Chair, and twelve other members present.

Awards Recommended:—

Silver Banksian Medal.

To Messrs. Gill, Falmouth, for Rhododendrons and Conifers.

Banksian Medal.

To Messrs. Barr, Taplow, for shrubs and alpine plants.

To Messrs. Cheal, Crawley, for shrubs and alpine plants.

To Messrs. Cutbush, Barnet, for rock garden and alpine plants.

To Messrs. Russell, Richmond, for forced shrubs.

To Messrs. Waterer, Sons & Crisp, Twyford, for shrubs and alpine plants.

To Mr. G. G. Whitelegg, Chislehurst, for shrubs.

Award of Merit.

To *Acacia Baileyana* (votes 10 for), from Commendatore Cecil Hanbury, M.P., F.L.S., La Mortola, Italy. A well-known Australian species of spreading habit. The finely bipinnate grey foliage affords pleasing contrast to the very numerous deep yellow, fragrant flowers.

To *Acacia* × *Hanburyana* (votes 9 for), from Commendatore Cecil Hanbury, M.P., F.L.S., La Mortola. This was stated to be a hybrid between *A. Baileyana* and *A. podalyriaefolia*. It is of more erect habit than the former and rather more vigorous than the latter parent. Most of its leaves are reduced to narrow phyllodes which recall those of *A. podalyriaefolia*; but here and there may be found a more or less perfect bipinnate *Baileyana* leaf. The flowers of the specimens shown were rather paler in colour than those of either species.

To *Aloe ciliaris* (votes 9 for), from Commendatore Cecil Hanbury, M.P., F.L.S., La Mortola. A species of climbing habit reaching a height of twenty-five feet. The narrow, deep red flowers, much resembling those of a *Lachenalia*, are freely produced in late winter.

To *Echeveria multicaulis* (votes 9 for), from Commendatore Cecil Hanbury, M.P., F.L.S., La Mortola. This species bears numerous scarlet, yellow-tipped flowers during the winter and spring months. It is said to have withstood as much as thirteen degrees of frost.

To *Tetralochea thymifolia* (votes 9 for), from Sir Wm. Lawrence, Bt., Burford, Dorking. An Australian undershrub a foot or more in height with small, ovate, downy leaves in threes or fours and four-petalled mauve flowers borne singly in the leaf-axils. A desirable plant for pot-cultivation in the greenhouse.

Other Exhibits.

Mr. Klinkert, Richmond: clipped Box and Yew trees.

Messrs. Tucker, Oxford: alpine plants.

Messrs. Sheppard, Birmingham: shrubs and alpiners.

Messrs. Veitch, Exeter: Hamamelis species and *Berberis japonica hyemalis*.

Commendatore C. Hanbury, La Mortola: *Aloe arborescens natalensis*, *Acacia podalyriaefolia*, and *Bignonia venusta*.

Mr. Bannerman, Chippenham: *Dombeya Cayeuxii*.

Sir Wm. Lawrence, Bt., Dorking: *Acacia diffusa*, and *Monochastum alpestre*.

Mr. C. Ingram, Benenden: *Prunus campanulata*.

Mr. N. G. Hadden, Porlock: fruits of *Araujia sericifera*.

M. Cayeux, Le Havre: *Dombeya Cayeuxii*.

Mr. F. G. Preston, Cambridge: *Dombeya Cayeuxii*.

FLORAL COMMITTEE, FEBRUARY 8, 1927.

Section A.

Mr. H. B. MAY, V.M.H., in the Chair, and twenty-one other members present.

Awards Recommended :—

Silver Banksian Medal.

To Messrs. Allwood, Haywards Heath, for Carnations.
To Messrs. Blackmore & Langdon, Bath, for Cyclamen.
To Messrs. Carter, Raynes Park, for Crocus lawn.
To Mr. J. W. Forsyth, Putteridge, for Cyclamen.

Banksian Medal.

To Messrs. Englemann, Saffron Walden, for Carnations.
To Miss Heathcote, Williton, for Violets.
To Mr. J. J. Kettle, Corfe Mullen, for Violets.
To Messrs. Low, Enfield, for Carnations.
To Mr. G. W. Miller, Wisbech, for Primroses, etc.
To Messrs. Sutton, Reading, for Primulas.

First-class Certificate.

To Iris ' Wedgwood ' (votes 15 for), from Messrs. Lowe & Shawyer, Uxbridge. This beautiful Iris received an Award of Merit on January 27, 1925. It is of Dutch origin, having been raised by the exhibitors and Messrs. van Waveren. It resulted from a cross between *I. tingitana* and an early flowering form of *I. Xiphium*, known in the trade as *I. filifolia*. The growth is very strong, and about 2 to 2½ feet high. The flowers are large and pale blue, with golden markings on the falls. It is an excellent variety for market purposes, flowering several weeks earlier than any other similar Iris except *I. tingitana*. It stands mild forcing well, and gives a wonderful crop of flowers.

Award of Merit.

To Carnation ' Vesta ' (votes unanimous), from Messrs. Englemann, Saffron Walden. A well-formed, bright cerise, perpetual flowering variety suitable for market work.

Other Exhibit.

W. Cursham, Esq., Thrumpton : Cyclamen ' Thrumpton ' variety.

Section B.

Mr. G. W. E. LODER, M.A., F.L.S., in the Chair, and sixteen other members present.

Awards Recommended :—

Silver Banksian Medal.

To Messrs. Barr, Taplow, for shrubs and alpine plants.
To Messrs. Cutbush, Barnet, for shrubs and rock plants.
To Messrs. Russell, Richmond, for forced shrubs.

Banksian Medal.

To Central Garden Supplies, Kenton, for rock garden shrubs.
To Messrs. Cheal, Crawley, for shrubs and rock plants.
To Mr. Clarence Elliott, Stevenage, for alpine plants.
To Mr. G. Reuthe, Keston, for shrubs and alpine plants.
To Messrs. Tucker, Oxford, for alpine plants.
To Messrs. Waterer, Sons & Crisp, Twyford, for shrubs and alpine plants.
To Mr. G. G. Whitelegg, Chislehurst, for shrubs.

Award of Merit.

To *Colchicum montanum* (votes unanimous), from Mrs. W. R. Dykes, Sutton Green. A small spring-flowering species, about 4 inches high. The goblet-shaped white flowers arise singly or in pairs from the spreading clusters of dark green, lanceolate leaves. *C. montanum* is a variable species, and the specimens

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shown were of a good form, collected in Croatia a few years ago by the late Mr. Dykes.

To *Crocus* × *chrysanthus* 'Curlew' (votes unanimous), from Mr. E. A. Bowles, Waltham Cross. This is one of the many beautiful hybrid crocuses raised by Mr. Bowles. 'Curlew' is a seedling from the cross between *C. chrysanthus* and the nearly related *C. arius*, and combines the yellow of the former with the blue of the latter to produce a flower of soft buff yellow with bluish-purple stripes on the exterior.

To *Crocus gargaricus* (votes unanimous), from Mr. E. A. Bowles, Waltham Cross. The small, globular flowers of this species are of a uniform brilliant orange colour, and, unlike those of any other spring-flowering crocus, they appear before the leaves begin to show. Another character peculiar to this and a few other species is the production of underground stolons, at the extremities of which new corms are developed.

Other Exhibits.

Mr. F. G. Wood, Ashted : shrubs and alpine plants.

Mr. J. Klinkert, Richmond : clipped Box and Yew trees.

Messrs. Gill, Falmouth : Rhododendrons, etc.

Mr. Ackworth, Chobham : shrubs.

The Misses Hopkins, Coulsdon : rock plants.

Mr. Murray Hornibrook, Ripley : *Picea rubra* var. *crista-galli*. This is the only dwarf form of *P. rubra*. It is a plant of extremely slow growth, the specimen shown being only 18 inches high, although raised from seed some twenty years previously. It appeared at Abbeylax, Ireland, in a bed of normal *P. rubra*.

FLORAL COMMITTEE, FEBRUARY 22, 1927.

Section A.

Mr. H. B. MAY, V.M.H., in the Chair, and nineteen other members present.

Awards Recommended :—

Gold Medal.

To Messrs. Sutton, Reading, for Cyclamen.

Silver-gilt Banksian Medal.

To Mr. J. W. Forsyth, Putteridge, for Cyclamen.

Silver Banksian Medal.

To the Duchess of Wellington, Basingstoke, for greenhouse flowering plants.

Banksian Medal.

To Messrs. Allwood, Haywards Heath, for Carnations.

To Messrs. Engelmann, Saffron Walden, for Carnations.

To Mr. G. W. Miller, Wisbech, for spring bulbs.

To Messrs. S. Low, Enfield, for Carnations and other greenhouse plants.

Other Exhibits.

Misses Allen-Brown, Henfield : Violets.

Mr. J. J. Kettle, Corfe Mullen : Violets.

Section B.

Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and nineteen other members present.

Awards Recommended :—

Silver Banksian Medal.

To Messrs. Veitch, Exeter, for Camellias.

Banksian Medal.

To Messrs. Barr, Covent Garden, for shrubs and rock plants.

To Messrs. Cheal, Crawley, for alpine plants.

To Messrs. Cutbush, Barnet, for shrubs and rock plants.
 To Mr. C. Elliott, Stevenage, for alpine plants.
 To Messrs. Gull, Falmouth, for Rhododendrons and Anemones.
 To Mr. C. Kirch, Beckenham, for shrubs and alpine plants.
 To Messrs. Prichard, Christchurch, for alpine plants.
 To Mr. G. Reuthe, for shrubs and alpine plants.
 To Messrs. Russell, Richmond, for forced shrubs.
 To Messrs. Tucker, Oxford, for alpine plants.
 To Messrs. Waterer, Sons & Crisp, Twyford, for shrubs and alpine plants.
 To Mr. F. G. Wood, Ashted, for shrubs and alpine plants.

Award of Merit.

To *Crocus biflorus Alexandri major* (votes unanimous), from Mr. H. McD. Edelstein, Lindheld. This *Crocus* has large, glistening white flowers, the outer segments of which are purple on the outside except for a margin of white. The variety *Alexandri*, which received an **A.M.** in 1915 and is figured in the *JOURNAL*, vol. 41, p. 171, differs from the present plant in the narrower white margin of its somewhat smaller flowers.

To *Crocus minimus*, Dykes' variety (votes unanimous), from Mrs. W. R. Dykes, Sutton Green. A good form of this variable Corsican species. The flowers are small—though not the smallest of the family, as the name suggests—light purple within and feathered outside with chocolate on a cream ground.

To *Galanthus plucatus*, Warham variety (votes unanimous), from Lady Beatrix Stanley, Market Harborough. This is a very good form of the Crimean Snow-drop and was found growing in a village garden in Norfolk by the Rev. C. Digby. A handsome plant with broad foliage and large, upstanding flowers.

Other Exhibits.

Mr. J. Klinkert, Richmond: clipped Box and Yew trees.
 Messrs. Baker, Wolverhampton: shrubs and alpine plants.
 The Horticultural College, Handley: *Iris reticulata*.
 Central Garden Supplies, Kenton: shrubs and alpine plants.
 The Messrs. Hopkins, Coulsdon: rock plants.
 Messrs. Prichard, Christchurch: *Saxifraga* 'Felicity.'
 Mr. C. Kirch, Beckenham: *Saxifraga* 'Felicity.'
 Mrs. W. R. Dykes, Sutton Green: *Galanthus Atkinsii* (shown as *Galanthus Bittoni*), *Crocus chrysanthus* 'Bullfinch,' and an unnamed variety, *C. biflorus Weldeni* and *C. Balansea*.

FLORAL COMMITTEE, MARCH 8, 1927.

Section A.

Mr. H. B. MAY, V.M.H., in the Chair, and twenty-two other members present

Awards Recommended:—

Gold Medal.

To Messrs. Sutton, Reading, for Hyacinths.

Silver-gilt Banksian Medal.

To Messrs. Carter, Raynes Park, for Hyacinths.
 To Mr. J. W. Forsyth, Putteridge, for Cyclamen.
 To Baron Bruno Schröder, Englefield Green, for greenhouse plants.

Silver Banksian Medal.

To Mrs. R. Emmet, Warwick, for Cyclamen.
 To Messrs. S. Low, Enfield, for Carnations.

Banksian Medal.

To Messrs. Allwood, Haywards Heath, for Carnations.
 To Messrs. Engelmann, Saffron Walden, for Carnations.
 To Mr. E. J. Hicks, Twyford, for Roses.

Award of Merit.

To *Helleborus orientalis* 'Prince Rupert' (votes unanimous), from Messrs. Barr, Covent Garden. The substantial, round, nodding flowers of this variety are creamy-white in colour densely speckled with crimson.

Other Exhibits.

Mr. J. J. Kettle, Corfe Mullen : Violets.
Mr. W. Mauger, Guernsey : *Lachenalia* 'Pegu.'
Mr G. W. Miller, Wisbech : *Polyanthus*.
Mr. M. Prichard, Christchurch : *Helleborus orientalis* 'Triumphant.'
Messrs. Russell, Richmond : *Dracaena deremensis* Bausei, A.M., 1921.
Mr. I. R. Wilmot, Exmouth : seedling Arum and Clivia.

Section B.

Mr. G. W. E. LODER, M.A., F.L.S., in the Chair, and nineteen other members present.

Awards Recommended :—

Silver Banksian Medal.

To Messrs. Barr, Taplow, for rock plants and Narcissi.
To Messrs. Cutbush, Barnet, for shrubs and alpine plants.
To Mr. C. Kirch, Beckenham, for alpine plants.
To Mr. M. Prichard, Christchurch, for shrubs and rock plants.
To Messrs. Russell, Richmond, for flowering shrubs.
To Vice-Admiral Walker-Heneage Vivian, Swansea, for flowering shrubs.

Banksian Medal.

To Mr. C. Elliott, Stevenage, for alpine plants.
To Messrs. Gill, Falmouth, for Rhododendrons.
To Messrs. Hodson, Mapperley, for shrubs and rock plants.
To Mr. G. Reuthe, Keston, for shrubs and rock plants.
To Mr. W. H. Rogers, Southampton, for rock plants.
To Messrs. Tucker, Oxford, for alpine plants.
To Messrs. Waterer, Sons & Crisp, Twyford, for rock plants.
To Mr. F. G. Wood, Ashted, for rock plants.
To Messrs. Wm. Wood, Taplow, for rockery.

Award of Merit.

To *Crocus Imperati albus* (votes unanimous), from Mrs. W. R. Dykes, Sutton Green. A very good variety with large white flowers which when shown were widely expanded, revealing the yellow-tinted base and brilliant orange styles.

To *Rhododendron* × 'Cilpinense' (votes 8 for, 4 against), from Lady Aberconway and the Hon. H. D. McLaren, Bodnant. This was raised at Bodnant from a cross between *R. ciliatum* and *R. moupinense*. It is hardy and a compact grower, and flowered for the first time three years from the time of sowing. The flowers are borne in clusters of two or three and each is about 3 inches across, flushed with pale pink and spotted with deeper colour. The elliptical leaves are about 4 inches long.

Other Exhibits.

The Misses Hopkins, Coulsdon : rock plants.
Messrs. Jeans & Trowbridge, West Moors : rock plants.
Messrs. Maxwell & Beale, Broadstone : rock plants.
The Rev. H. R. Meyer, Watton : bulbous Irises.
Mr J. Robinson, New Eltham : rock plants.
Lady Aberconway and the Hon. H. D. McLaren, Bodnant : *Rhododendron ciliatum* and *R. pachytrichum*.

Mr. G. P. Baker, Sevenoaks : *Crocus Sieberi versicolor*.

The Marquis of Headfort, Kells : *Rhododendron* sp. K.W. 6069.

Mr. M. Prichard, Christchurch : *Saxifraga* 'Perle Rose' and S. 'Brenda Prichard.'

L. de Rothschild, Esq., Exbury : *Rhododendron Mackenzianum*. A species collected by Farrer (No. 801) at Hpimaw. A plant of straggling growth with beautiful, fragrant flowers of milky white, flushed on the outside with purplish rose (p. xxxv.).

FLORAL COMMITTEE, MARCH 22, 1927.

Section A.

Mr. H. B. MAY, V.M.H., in the Chair, and twenty-one other members present.

Awards Recommended :—

Silver-gilt Banksian Medal.

To Mr. G. H. Dalrymple, Bartley, for Freesias.

Silver Banksian Medal.

To Mr. E. J. Hicks, Twyford, for Roses.

To Mr. G. Prince, Oxford, for Roses.

To Messrs. S. Low, Enfield, for Carnations.

To Messrs. Sutton, Reading, for Cinerarias and double Wallflowers.

Banksian Medal.

To Messrs. Allwood, Haywards Heath, for Carnations.

To Messrs. Engelmann, Saffron Walden, for Carnations.

To Mr. G. W. Miller, Wisbech, for Primroses and Polyanthus.

Award of Merit.

To *Primula* 'Runnymede Gem' (votes 15 for), from Capt. B. Symons Jeune, Old Windsor. A very dwarf and compact cool greenhouse *Primula* growing not more than 6 to 8 inches in height. It bears dense whorls of very double pale lilac-mauve flowers. Its parentage is reputed to be *P. malacoides* fl. pl. and *P. sinensis alba* fl. pl.

Selected for trial at Wisley :

Freesia 'R. F. Felton,' from Mr. G. H. Dalrymple, Bartley.

Other Exhibits.

J. S. Arkwright, Esq., Presteign : Polyanthus and Primroses.

Miss E. Heathcote, Williton : Violets.

Messrs. Hewitt, Solihull : Delphiniums and Daffodils.

Mr. J. J. Kettle, Corte Mullen : Violets.

Mrs. E. V. Neal, Cambridge : Stocks from Palestine.

Mr. B. Pinney, Shipbourne : Violets.

Messrs. Reamsbottom, West Drayton : Anemones.

Section B.

Mr. G. W. E. LODGE, M.A., F.L.S., in the Chair, and seventeen other members present.

Awards Recommended :—

Silver Banksian Medal.

To Messrs. Cheal, Crawley, for flowering shrubs.

To Messrs. Cutbush, Barnet, for flowering shrubs and rock plants.

To Messrs. Cuthbert, Southgate, for Azaleas.

To Mr. C. Elliott, Stevenage, for rock garden.

To Messrs. Gill, Falmouth, for Rhododendrons.

To Messrs. Hillier, Winchester, for flowering shrubs.

To Lt.-Col. Messel, Staplefield, for flowering shrubs.

To Mr. M. Prichard, Christchurch, for alpine plants.

To Mr. G. Reuthe, Keston, for shrubs and alpine plants.

To Messrs. Russell, Richmond, for flowering shrubs.

To Messrs. Veitch, Exeter, for flowering shrubs.

To Messrs. Waterer, Sons & Crisp, Twyford, for alpine plants.

To Mr. F. G. Wood, Ashted, for shrubs and alpine plants.

Banksian Medal.

To Messrs. Baker, Codsall, for shrubs and alpine plants.

To Messrs. Cheal, Crawley, for flowering shrubs.

To Messrs. Hodson, Mapperley, for shrubs and alpine plants.

To Messrs. Maxwell & Beale, Broadstone, for alpine plants.

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To Mr. W. H. Rogers, Southampton, for shrubs and alpine plants.
To Messrs. Stewart, Ferndown, for shrubs and alpine plants.
To Messrs. Tucker, Oxford, for alpine plants.

Award of Merit.

To *Callia palustris alba* (votes 8 for), from Mrs. Garnett-Botfield, Albrighton. An interesting white-flowered variety of the well-known Marsh Marigold, found in Kashmir and shown by the introducer. The foliage is distinctly grey-green in hue, and adds greatly to the charm of the plant.

To *Magnolia salicifolia* (votes unanimous), from Lionel de Rothschild, Esq., Exbury. A very beautiful deciduous species from Japan, flowering before the leaves appear. The flowers are borne on short, slender, lateral twigs and each is 4 inches in diameter. The three pale green sepals are about one-half as long as the narrow petals, which are six in number and pure white. A bunch of rose-pink stamens occupies the centre.

To *Rehmannia hybrida alba* (votes 8 for, 1 against), from Sir Wm. Lawrence, Burford. A hybrid of *R. angulata* × *R. rupestris*. A tall, erect plant with dark foliage and large, pendant, white flowers growing singly in the leaf-axils. This hybrid resembles *R. kewensis*.

To *Iris unguicularis* var. *speciosa* (votes unanimous), from Lionel de Rothschild, Esq., Exbury. Shown as *Iris stylosa*, Exbury form. A well-known late-flowering form differing from the type in its taller, deep-violet flowers.

To *Rhododendron hippophaeoides* (votes unanimous), from Lady Aberconway and the Hon. H. D. McLaren, Bodnant. A species of the Lapponicum series, discovered in Yunnan some years ago by Forrest. It forms a bush three or four feet in height, with small grey-green leaves and numerous lavender-blue flowers appearing in March.

To *Rhododendron (Azalea) Kurume Kiriu* (votes unanimous), from Messrs. R. Veitch & Son, Exeter. A dwarf, evergreen, Japanese Azalea bearing abundant salmon-pink flowers of the 'hose-in-hose' type.

To *Rhododendron virgatum* (K.W. 6279) (votes unanimous), from Lt.-Col. L. C. R. Messel, Staplefield. The plants shown were raised from seed collected by Capt. Kingdon Ward, and although only two years old were flowering freely. The blush-pink flowers are 2 inches in diameter, and are borne singly in the axils of the small, lanceolate, evergreen leaves.

To *Saxifraga* 'Coombe White' (votes 7 for), from Frank Lloyd, Esq., Croydon. This variety is a good seedling from *S. Rocheliana*. From the dense cushion of grey-green shoots rise numerous short stalks, each bearing a large, pure white flower, well formed and of good substance.

Other Exhibits.

Misses Hopkins, Coulsdon : rock plants.

Messrs. Stewart & Sons, Ferndown : *Cupressus macrocarpa pygmaea*.

J. S. Arkwright, Esq., Presteigne : *Aubrieta* 'Mrs. Tom Romsey.'

Messrs. Gill, Falmouth : *Rhododendron* 'Lutifolium.'

Messrs. Baker, Codsall : *Primula* 'Peg.'

G. W. Blaythwayt, Esq., Taunton : *Acacia dealbata*, *A. falcata*.

Major Pam, Broxbourne : *Asphodelus acaulis*, *Tulipa australis*.

Murray Hornibrook, Esq., Ripley : *Anemone intermedia*.

Miss Beck, Great Clonmell : *Romulea ramiflora*.

FLORAL COMMITTEE, APRIL 5, 1927.

Section A.

Mr. H. B. MAY, V.M.H., in the Chair, and twenty other members present.

Awards Recommended :—

Silver Banksian Medal.

To Messrs. Blackmore & Langdon, Bath, for *Schizanthus*.

To Messrs. Chaplin, Waltham Cross, for *Roses*.

To Mr. G. H. Dalrymple, Bartley, for *Freesias*.

To Messrs. Dobbie, Edinburgh, for *Polyanthus*.

To Mr. J. Douglas, Great Bookham, for *Auriculas*.

To Mr. E. J. Hicks, Hurst, for *Roses*.

To Mr. H. J. Jones, Lewisham, for *Polyanthus*.

To Mr. J. H. Pemberton, Havering, for *Roses*.

To Mr. G. Prince, Oxford, for *Roses*.

Banksian Medal

- To Messrs. Allwood, Haywards Heath, for Carnations.
 To Messrs. Engelmann, Saffron Walden, for Carnations.
 To Mr. J. J. Kettle, Corfe Mullen, for Violets.
 To Messrs. S. Low, Enfield, for Carnations and Hippeastrums.
 To Mr. G. W. Miller, Wisbech, for Polyanthus.
 To Messrs. Sutton, Reading, for Cinerarias.

Award of Merit.

To *Arctotis breviscapa* 'Durus' (votes unanimous), from Messrs. Ladhams, Southampton. A deep rich red flowered variety of the South African *A. breviscapa*. The type, which has deep golden-orange flowers, received an Award of Merit on June 29, 1926. The variety 'Durus' is of robust habit and a very desirable plant.

To *Auricula* 'Duchess of York' (votes 13 for), from Mr. J. Douglas, Great Bookham. An alpine variety with large handsome plum-purple flowers, slightly paler at the margins and having pale yellow centres.

To *Auricula* 'Prince Henry' (votes unanimous), from Mr. J. Douglas, Great Bookham. A show variety with mealy foliage and a large truss of pale lilac-mauve flowers with white centres.

To Carnation 'Mrs. A. J. Cobb' (votes unanimous), from Messrs. A. F. Dutton, Iver. A glowing crimson perpetual-flowering variety with a very decided and pleasing clove scent. The flowers are large and have non-bursting calyces. They are borne on rigid stems of great length. This variety was recently awarded the *Daily Mail* Gold Challenge Cup for the best new scented Carnation.

To Carnation 'W. H. Page' (votes unanimous), from Mr. W. H. Page, Hampton. A bright pink perpetual-flowering variety of excellent form and medium size. The flowers are serrated at the edges and have good calyces. This is a good Carnation for market work.

Other Exhibits.

W. Cuthbertson, Esq., J.P., Duddingston: *Hunnemannia fumariæfolia*, A.M., 1898.

G. W. W. Blathwayt, Esq., West Porlock: *Senecio*, probably a cross between *S. Herthieri* and a greenhouse *Cineraria*, both of which are planted out permanently in the garden at West Porlock House.

Farnham Royal Nurseries, Farnham Royal: Carnation 'Doris.'

Mr. B. Pinney, Shipbourne: Violets.

Mr. W. A. Watts, St. Asaph: Hyacinths propagated from cut bulbs.

Section B.

Mr. G. W. E. LODER, M.A., F.L.S., in the Chair, and nineteen other members present.

Awards Recommended:—**Silver-gilt Banksian Medal.**

To Messrs. Russell, Richmond, for Azaleas.

Silver Banksian Medal.

To C. Kirch, Esq., Beckenham, for alpine plants.

To Messrs. Prichard, Christchurch, for alpine plants.

Banksian Medal.

To Messrs. Baker, Codsall, for shrubs and alpine plants.

To Messrs. Cutbush, Barnet, for Azaleas and alpine plants.

To Mr. C. Elliott, Stevenage, for shrubs and alpine plants.

To Messrs. Gill, Falmouth, for Rhododendrons.

To Messrs. Hodson, Mapperley, for shrubs and alpine plants.

To Messrs. Jeans & Trowbridge, West Moors, for shrubs and alpine plants.

To Messrs. Ladhams, Southampton, for shrubs and alpine plants.

To Mr. G. Reutte, Keston, for shrubs and alpine plants.

To Mr. W. H. Rogers, Southampton, for shrubs and alpine plants.

To Messrs. Tucker, Oxford, for shrubs and alpine plants.

To Messrs. Waterer, Sons & Crisp, Twyford, for shrubs and alpine plants.

To Mr. F. G. Wood, Ashted, for shrubs and alpine plants.

Award of Merit.

To *Acacia fimbriata* (votes 12 for), from the Director, Royal Botanic Gardens, Kew. This is very similar to *A. prominens*, of which species this plant is possibly a variety. Phyllodes linear, $1\frac{1}{2}$ inch long, flowers bright golden-yellow, fragrant. A native of New South Wales.

To *Arctostaphylos scapigera* (votes unanimous), from T. Hay, Esq., Hyde Park. The large flowers of this South African plant are borne singly on long, leafless peduncles. The colour is bright orange, varying in different plants, with a darker zone. The leaves are dark green, paler beneath.

To *Camellia* 'Lady Clare' (votes unanimous), from Lionel de Rothschild, Esq., Exbury. An evergreen shrub of vigorous growth. The flowers are bright pink, large and semi-double.

To *Prunus incisa* (votes unanimous), from Collingwood Ingram, Esq., Benenden. A small-flowered Japanese species of great beauty. The pendulous white flowers open widely and are produced in clusters.

To *Prunus yedoensis* (shown as *P. serrulata* 'Yoshino') (votes unanimous), from R. C. Notcutt, Esq., Woodbridge. An early-flowering Japanese cherry of great charm. The rounded single flowers open pale pink, but the colour deepens slightly as the flower ages.

To *Rhododendron carneum* (votes unanimous), from Lionel de Rothschild, Esq., Exbury. A beautiful, tender, evergreen shrub allied to *R. Veitchianum* and introduced from N. Burma in 1909. The leaves are elliptic-obovate, $2\frac{1}{2}$ to 5 inches long, dark green above, paler beneath; flowers in clusters. The flesh-pink corollas are widely expanded, 3 to 4 inches in diameter. This species is figured at t. 8634 of the *Botanical Magazine*.

Other Exhibits.

G. W. W. Blathwayt, Esq., Taunton: *Rhododendron* seedling, *Delphinium macrocentron*.

J. Goodman, Esq., Godalming: *Acacia Ricciana*.

F. J. Hanbury, Esq., E. Grinstead: *Primula rosea* Brockhurst var., *Primula* 'Purple Splendour.'

Misses Hopkins, Coulsdon: rock plants.

F. Lloyd, Esq., Croydon: *Saxifraga scardica minor*.

Messrs. Maxwell & Beale, Broadstone: shrubs and alpine plants.

Mr. R. C. Notcutt, Woodbridge: *Ribes sanguineum splendens*.

Baldwin Pinney, Esq., Tonbridge: *Viola septentrionalis*.

Messrs. Prichard, Christchurch: *Lysichiton hamtschalcense*, Aubrietias.

Mr. J. Robinson, New Eltham: rock garden.

Mrs. Torkington, Maidenhead: *Primula* 'Snow White Jewel.'

Vice-Admiral Walker Heneage Vivian, Swansea: *Rhododendrons* 'Rhoda' and 'Ann.'

A. M. Williams, Esq., Launceston: *Rhododendron cantabile*.

FLORAL COMMITTEE, APRIL 26, 1927.

Section A.

Mr. H. B. MAY, V.M.H., in the Chair, and nineteen other members present.

Awards Recommended:—

Silver-gilt Banksian Medal.

To Messrs. Peed, West Norwood, for *Streptocarpus*.

Silver Banksian Medal.

To Messrs. Allwood, Haywards Heath, for Carnations.

To Messrs. Blackmore & Langdon, Bath, for Polyanthus.

To Messrs. B. R. Cant, Colchester, for Roses.

To Mr. G. H. Dalrymple, Bartley, for Primulas and Freesias.

To Messrs. S. Low, Enfield, for Carnations.

To Mr. J. H. Pemberton, Havering, for Roses.

Banksian Medal.

To Messrs. Carter, Raynes Park, for Cinerarias.

To Messrs. Dobbie, Edinburgh, for Polyanthus.

To Messrs. Engelmann, Saffron Walden, for Carnations.

To Mr. H. J. Jones, Lewisham, for Polyanthus.
 To Mr. G. W. Miller, Wisbech, for Polyanthus.
 To Messrs. Sutton, Reading, for Irises.

Award of Merit.

Anemone pavonina 'High Hall' strain (votes unanimous), from Mrs. Bernard, High Hall, Wimborne. A very handsome strain of single Anemones, generally like *A. fulgens* but larger. The flowers are borne on tall stems and have a good range of rich, pleasing colours, including salmon, rose, red and bright scarlet with black centre.

To Carnation 'Edward Page' (votes 9 for, 4 against), from Mr. W. H. Page, Hampton. An excellent market variety, the flowers of which are bright cerise-pink in colour and have non-bursting calyces.

To Hydrangea 'H. B. May' (votes unanimous), from Mr. H. J. Jones, Lewisham. A variety bearing very big trusses of large bright pink flowers lightly edged with pale mauve. The broad sepals overlap slightly.

To Hydrangea 'J. F. McLeod' (votes unanimous), from Mr. H. J. Jones, Lewisham. A deep pink Hydrangea bearing its flowers in compact trusses of medium size.

To Hydrangea 'Lord Lambourne' (votes 14 for), from Mr. H. J. Jones, Lewisham. The medium-sized carmine-pink flowers of this variety are borne in a large handsome truss.

The awards recommended to Freesias and Lachenalias on trial at Wisley were confirmed.

Other Exhibits.

Messrs. Baker, Codsall: Primula 'Pam.'

Miss Christy, Chelmsford: Polyanthus, etc.

Messrs. J. & A. H. Crook, Jordans: Polyanthus.

H. N. Dennis, Esq., Weston Turville: Polyanthus.

Messrs. Dutton, Iver: Carnation 'Mrs. A. J. Cobb,' A.M., April 5, 1927.
 Selected for trial at Wisley.

Mrs. Dykes, Sutton Green: seedling *Iris pumila*. Selected for trial at Wisley.

Messrs. Jarman, Chard: Pelargoniums.

Mr. J. J. Kettle, Corfe Mullen: Violets.

C. Kirch, Esq., Beckenham: Auricula 'Imp.'

Messrs. Ladhams, Southampton: *Myosotis sylvatica* 'Bijou.'

Mr. B. Pinney, Shipbourne: Violets and Polyanthus.

Messrs. Reamsbottom, West Drayton: Anemones.

Baron Schröder, Englefield Green: *Gesnera cardinalis*.

Messrs. Sutton, Reading: Cinerarias.

Section B.

Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and seventeen other members present.

Awards Recommended:—

Gold Medal.

To the Hon. Vicary Gibbs, Elstree, for shrubs and rock plants.

Silver Banksian Medal.

To Messrs. Cuthbert, Southgate, for flowering shrubs.

To C. Kirch, Esq., Beckenham, for alpine plants.

To Messrs. Low, Enfield, for flowering shrubs.

To Messrs. Prichard, Christchurch, for alpine plants.

Banksian Medal.

To Messrs. Baker, Codsall, for shrubs and alpine plants.

To Messrs. Cutbush, Barnet, for rock garden.

To Messrs. Hodson, Mapperley, for alpine plants.

To Messrs. Jeans & Trowbridge, West Moors, for alpine plants.

To Mr. Gavin Jones, Letchworth, for alpine plants.

To Messrs. Ladhams, Southampton, for hardy plants.

To Mr. G. Reuthe, Keston, for shrubs.

To Messrs. Rogers, Southampton, for alpine plants.

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To Messrs. Russell, Richmond, for flowering shrubs.

To Messrs. Tucker, Oxford, for alpine plants.

To Messrs. Waterer, Sons & Crisp, Twyford, for shrubs and alpine plants.

To Mr. F. G. Wood, Ashted, for shrubs and alpine plants.

Award of Merit.

To *Cydonia* 'Wisley Salmon' (votes unanimous), from the Director, R.H.S. Gardens, Wisley. A vigorous seedling of *Cydonia Sargentiana*, which it resembles in its good habit and freedom of flowering. The branches shown were very thickly set with medium-sized flowers of a bright salmon-scarlet shade.

To *Daphne retusa* (votes unanimous), from Sir Wm. Lawrence, Bt., Burford. A small, densely-branched shrub. The leaves are oblong, dark green, and pale beneath, and remain on the plant for two seasons. The fragrant flowers are borne in umbels produced from the terminal buds. They are white inside with a tinge of rose, and rosy-lilac outside.

To *Lysichiton kamtschaticense* (votes unanimous), from Messrs. Prichard, Christchurch. A strong-growing bog plant with large, pale green leaves reaching a height of 2 feet, and yellow Arum-like inflorescences.

To *Olearia ramulosa* (votes 12 for, 1 against), from Sir Wm. Lawrence, Bt. A graceful shrub with long, spreading branches bearing small, linear-lanceolate leaves and numerous small white flowers. This species requires the shelter of a wall.

To *Primula ninguida* (votes 6 for), from Lt.-Col. L. C. Messel, Handcross. A new species of the Nivalis section, collected by Capt. Kingdon Ward (No. 5745). The entire ovate leaves are slightly farinose and the inflorescence is heavily covered with meal. The corolla is dark purple with a yellow tube.

To *Syringa* 'Lamartine' (votes unanimous), from the Director, R.B.G., Kew. This is an early flowering hybrid of *S. Giraldui* and a variety of *S. vulgaris*. The dark-coloured single flowers are borne in large, leafless trusses and are delightfully fragrant.

To *Rhododendron* 'Linley' (votes 6 for, 3 against), from Lt.-Col. L. C. Messel, Handcross. A large-flowered *Loderi* hybrid of soft pink. The base of the flower is slightly spotted with carmine.

To *Rhododendron* 'Oliver' (votes 8 for, 1 against), from Lt.-Col. Messel. Similar to the preceding, but with deep pink flowers, somewhat paler within and less widely expanded.

Other Exhibits.

Mr. N. Baggesen, Tunbridge Wells: seedling crab.

G. W. Blathwayt, Esq., Porlock: *Rhododendron* seedling.

Central Garden Supplies, Kenton: shrubs and alpine plants.

Chez Nous Nurseries, Newick: shrubs and alpine plants.

Mrs. Clive, Yeovil: *Cheiranthus mutabilis* 'Mrs. Clive.'

Messrs. Cutbush, Barnet: *Berberis* seedling.

Mr. G. R. Downer, Chichester: *Aubrietia* 'G. R. Downer.'

Messrs. C. Elliot, Stevenage: *Lewisia Tweedyi*, *Sisyrinchium filifolium*.

The Hon. Vicary Gibbs, Elstree: *Prunus Padus*, *Syringa dilatata*.

Mr. Hemsley, Crawley: shrubs and alpine plants.

Misses Hopkins, Coulsdon: rock plants.

E. Marsden Jones, Esq., Devizes: *Pulmonaria longifolia*, *P. l. coerulea*.

The Director, R.B.G., Kew: *Rhododendron cheilanthemum*.

Mr. J. Klinkert, Richmond: clipped trees.

C. Kirch, Esq., Beckenham: *Leioophyllum prostratum*.

Sir Wm. Lawrence, Burford: *Olearia dentata*, *Buddleia caryopteridifolia*, *Tweedia oxypetalum coeruleum*.

Messrs. Maxwell & Beale, Broadstone: shrubs and alpine plants.

Lt.-Col. L. C. R. Messel, Handcross: *Rhododendron Schlippenbachii*, *Ribes cruentum*, *Arbutus furiens*, *Rhododendron* 'Anne.'

Major A. Pam, Broxbourne: *Hippeastrum rutilum*.

Messrs. Prichard, Christchurch: *Aubrietias* 'Russell Vincent Prichard,' 'Maurice Prichard,' 'Triumphant.'

Mr. J. Robinson, New Eltham: alpine plants.

L. de Rothschild, Exbury: *Rhododendron Delavayi*.

C. Sandeman, Esq., Jerez de la Frontera: *Ornithogalum arabicum*.

Exors. of the late W. C. Slocock, Esq., Woking: *Rhododendrons* 'Dairymaid,' 'Mt. Everest,' 'Mrs. Mary Ashley,' 'Cherry Ripe,' 'Elspeth.'

Mr. G. G. Whitelegg, Chislehurst: shrubs.

Mr. Woollard, Brighton: shrubs and alpine plants.

FLORAL COMMITTEE, MAY 3, 1927.

Section B.

Mr. G. W. E. LODER, M.A., F.L.S., in the Chair, and eighteen other members present.

Awards Recommended:—

Award of Merit.

To *Arbutus furiens* (votes 10 for, 3 against), from Mr. G. Reuthe, Keston. A neat, erect-growing shrub with small, bristle-pointed leaves and numerous racemes of waxy white flowers. A native of Chile and doubtfully hardy except in sheltered places in the south.

To *Cassiope Mertensiana* (votes unanimous), from Mr. G. Reuthe, Keston. A dainty shrub with erect, 6-inch stems densely covered by small, clasping leaves, from whose axils spring the pendant, white, bell-shaped flowers. This is a rather rare Californian species.

To *Rhododendron* 'Betty' (votes 10 for), from Lady Aberconway and the Hon. H. D. McLaren, Bodnant. A hybrid of *R. Fortunei* and *R. Thomsonii*, raised by Sir Edmund Loder. The inflorescence is large, carrying a dozen widely expanded deep-pink flowers.

To *Rhododendron russatum* (votes unanimous), from A. M. Williams, Esq., Launceston. A beautiful species of the Lapponicum series, collected by Forrest in Yunnan. The leaves are dark and leathery, two inches long; the flowers, which are of an intense violet-blue colour, are produced in terminal trusses of four or five.

Other Exhibits.

Lady Aberconway and the Hon. H. D. McLaren, Bodnant: *Rhododendrons*.

C. E. Heath, Esq., Holmwood: *Rhododendron* seedling

E. P. Magor, Esq., St. Tudy: *Rhododendron* 'Cinnkeys.'

Messrs. Veitch, Exeter: *Lhotzkia ericoides*, *Raphiolepis Delacourii*, *Grevillea asplenifolia*.

Messrs. Waterer, Sons & Crisp, Bagshot: *Rhododendrons*.

Mrs. C. M. Whittall, Haslemere: *Rhododendron* sp. Rock 59638, *Staphylea holocarpa*, *Prunus* sp.

FLORAL COMMITTEE, MAY 10, 1927.

Section A.

Mr. H. B. MAY, V.M.H., in the Chair, and twenty other members present.

Awards Recommended:—

Silver-gilt Banksian Medal.

To Messrs. Allwood, Haywards Heath, for Carnations.

To Lord Leconfield (gr. Mr. F. Streeter), Petworth, for *Schizanthus*.

Silver Banksian Medal

To Mr. E. J. Hicks, Hurst, for Roses.

To Messrs. S. Low, Enfield, for Carnations.

To Messrs. Peed, West Norwood, for *Streptocarpus*.

Banksian Medal.

To Messrs. Baker, Codsall, for *Trollius*.

To Messrs. B. R. Cant, Colchester, for Roses.

To Messrs. F. Cant, Colchester, for Roses.

To Messrs. Cutbush, Barnet, for *Hydrangeas*.

To Mr. G. H. Dalrymple, Bartley, for *Primulas*.

To Messrs. Dobbie, Edinburgh, for Sweet Peas.

To Mr. J. Douglas, Great Bookham, for *Auriculas*.

To Messrs. Engelmann, Saffron Walden, for Carnations.

To Messrs. Ladhams, Southampton, for herbaceous plants.

To Maytham Gardens, Rolvenden, for herbaceous plants

To Sir Hugh Murray (gr. Mr. A. Witt), Lyndhurst, for Stocks.

To Mr. J. H. Pemberton, Havering, for Roses.

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Award of Merit.

To *Carnation* 'Brilliant Improved,' Page's variety (votes unanimous), from Mr. W. H. Page, Hampton. An excellent scarlet market variety of the perpetual flowering type with a very full flower. It is regarded by large growers as the best *Carnation* of its colour for winter flowering.

To *Dianthus Allwoodii* 'Ann' (votes 14 for), from Messrs. Allwood, Haywards Heath. A variety of vigorous habit growing about a foot high. The smooth-edged double flowers are white with a maroon eye and have a pleasing scent.

To *Hydrangea* 'King George' (votes unanimous), from Mr. H. J. Jones, Lewisham. This variety bears handsome trusses of large, bright rose-pink, rounded, coarsely serrated flowers.

To *Hydrangea* 'Queen Mary' (votes 12 for, 5 against), from Mr. H. J. Jones, Lewisham. The soft pink serrated flowers of this variety are borne in a large truss.

To *Ranunculus asiaticus* 'Improved Palestine Strain' (votes unanimous), from Messrs. Watkins & Simpson, London. This excellent strain originated from the large wild single-flowered red *Ranunculus* found on the plains of Palestine. The flowers are large, very double and of pleasing colours, including yellow, golden-yellow, scarlet, pink, carmine and pale lemon. They last well as cut flowers in water.

Other Exhibits.

Messrs. Baker, Codsall: *Trollius* 'Codsall Orange' and T. 'Orange Princess.' Selected for trial at Wisley.

Messrs. Bolton, Halstead: Sweet Peas.

Messrs. Cheal, Crawley: Dahlias.

Mr. B. F. G. Currie, Hawley Hill: *Carnation* 'Miss Mary Currie.'

Mr. J. Douglas, Great Bookham: *Alpine Auricula* 'Bookham Belle.'

Mrs. W. R. Dykes, Woking: seedling *Iris aphylla*.

Messrs. Kelway, Langport: *Cinerarias* and *Pæonies*.

Mr. H. G. Longford, Abingdon: *Myosotis*, 'Longford's variety.'

Messrs. Sutton, Reading: *Stocks* and *Cinerarias*.

Sir Hugh Murray, Bramshaw: *Stock* 'Bramble Hill Beauty.'

Mr. B. Pinney, Shipbourne: hardy plants.

Messrs. Reamsbottom, West Drayton: *Anemones*.

Messrs. Waterer, Sons & Crisp, Twyford: *Geum* 'Fire Opal.'

E. K. Wilson, Esq., Wimbledon: *Amaryllis* 'Hilarys.'

Messrs. Wood, Taplow: *Geum* 'Fire Opal.'

Section B.

Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and fourteen other members present.

Awards Recommended:—

Silver-gilt Banksian Medal.

To Mrs. Walter Jones, Cowrie, for *Meconopsis*.

To Mr. R. C. Notcutt, Woodbridge, for shrubs.

Silver Banksian Medal.

To Messrs. Cuthbert, Southgate, for *Azaleas*.

To Messrs. Low & Co., Enfield, for shrubs.

To Messrs. Prichard, Christchurch, for alpine plants.

Banksian Medal.

To Messrs. Elliott, Stevenage, for alpine plants.

To Messrs. Maxwell & Beale, Broadstone, for alpine plants

To Messrs. Rogers, Southampton, for alpine plants.

To Messrs. Waterer, Sons & Crisp, Twyford, for alpine plants.

To Mr. F. G. Wood, Ashted, for alpine plants.

First-Class Certificate.

To *Meconopsis grandis* (votes unanimous), from Mrs. Walter Jones, Cowrie. A handsome, blue-flowered species. The specimen shown was about 2 feet high, with one open flower about 5 inches across, of rather pale colour and flushed with purple.

Award of Merit.

To *Dipelta floribunda* (votes 9 for, 1 against), from Lt.-Col. L. C. R. Messel, Handcross. A beautiful Chinese shrub introduced twenty-five years ago. The ovate-lanceolate leaves are deciduous; the wide tubular blossoms white, marked with gold and suffused pink on the outside.

To *Fothergilla major* (votes 12 for), from Lt.-Col. Messel. A well-known shrub which has long been in cultivation. The apetalous flowers are borne in cylindrical spikes and owe much of their beauty to the pink-tinted stamens.

To *Gentiana pyrenaica* (votes unanimous), from Mrs. Walter Jones. This species is of neat, tufted habit. The solitary, ten-lobed flowers are deep blue within and greenish on the exterior. A figure appears at t.5742 of the *Botanical Magazine*.

To *Myrsine africana* (votes 9 for, 4 against), from Lt.-Col. Messel. An ever-green shrub with small aromatic leaves and axillary clusters of inconspicuous flowers. These are followed by very numerous blue-black berries not unlike those of *Pernettya mucronata*.

To *Staphylea Coulombieri* (votes unanimous), from Lt.-Col. Messel. Said to be a hybrid between *S. colchica* and *S. pinnata*. A vigorous shrub bearing panicles of fragrant white flowers which are pink-tinted in the bud stage. The pinnate foliage is of a pleasing light green colour.

To *Staphylea Coulombieri* var. *Hesser* (votes 11 for, 1 against), from Lt.-Col. Messel. Similar to the preceding, but with smaller panicles and pale purple-tinted flowers.

Cultural Commendation.

To N. W. Jenkin, Esq., Hindhead, for *Gentiana verna*.

To the Curator, University Botanic Garden, Cambridge, for *Conandron ramondoides*.

Other Exhibits.

Lady Aberconway and the Hon. H. D. McLaren, Bodnant: *Rhododendron 'Oreocin'*

Central Garden Supplies, Kenton: alpine plants.

The Hon. Vicary Gibbs, Elstree: Gardenias.

Messrs. Hodson, Mapperley: rock plants.

Misses Hopkins, Coulsdon: rock plants.

N. W. Jenkin, Esq., Hindhead: *Primula pedemontana alba*.

John Innes Hort. Inst., Merton: *Hillebrandia sandwicensis*.

Mrs. Walter Jones: *Meconopsis quintuplinervia*.

Mr. Klinkert, Richmond: clipped trees.

G. W. E. Loder, Esq., Ardingly: various shrubs.

Mrs. Philip Martineau, Ascot: *Genista* sp.

Lt.-Col. Messel, Handcross: various shrubs.

Mr. R. C. Notcutt, Woodbridge: *Prunus Padus grandiflora*.

E. M. Preston, Esq., Hayes: *Felicia rotundifolia*, *Senecio multibracteata*.

Mr. J. Robinson, New Eltham: alpine plants.

Messrs. Russell, Richmond: flowering shrubs.

A. J. Sewell, Esq., Weybridge: *Erntuchium nanum*, *Silene Hookeri*.

H. J. Talbot, Esq., Uxbridge: *Verbascums* and *Phlox*.

The Curator, University Botanic Garden, Cambridge: *Xanthoceras sorbifolia*.

FLORAL COMMITTEE, MAY 24, 1927.

Section A.

AT CHELSEA.

Mr. H. B. MAY, V.M.H., in the Chair, and twenty-one other members present

*Awards Recommended:—**Award of Merit.*

To *Aster alpinus* 'Shirley' (votes 15 for, 5 against), from Messrs. Ladhams, Southampton. A charming dwarf herbaceous plant for the rock garden or front

of a border. It grows about 6 inches high and is very free flowering. The ray florets, of which there are several rows, are lilac-mauve in colour and the disc is yellow.

To Begonia 'Mrs. A. Baldwin Bantock' (votes 17 for), from Messrs. Blackmore & Langdon, Bath. A tuberous-rooted variety with handsome foliage and very full, double, bright salmon-pink flowers with crinkled edges.

To Begonia 'Mrs. F. Bedford' (votes unanimous), from Messrs. Blackmore & Langdon, Bath. Another tuberous-rooted variety with very large, double flowers having a white ground, edged and flushed with salmon-pink.

To Carnation 'E. Lyall Swete' (votes unanimous), from Mr. J. Douglas, Great Bookham. An excellent scarlet border variety with very full well-formed flowers.

To Carnation 'Evelyn' (votes unanimous), from Messrs. Engelmann, Saffron Walden. A perpetual-flowering variety of good shape with non-bursting calyces. The colour is bright pink flaked with white.

To Carnation 'G. F. Phillips' (votes unanimous), from Messrs. Hewitt, Solihull. A perpetual-flowering variety raised by the exhibitors as the result of a cross between 'Tarzan' and 'Enid.' The plant is extremely vigorous and free flowering. The blooms are of excellent shape, large, very full, dark crimson and beautifully scented.

To *Dianthus Allwoodii* 'Susan' (votes 16 for), from Messrs. Allwood, Haywards Heath. A good double, pale rosy-pink variety with crimson markings at the base of the petals.

To Hydrangea 'D.B. Crane' (votes 11 for, 4 against), from Mr. H. J. Jones, Lewisham. The flowers of this variety are deep pink and of medium size. They are borne in dense trusses.

To Hydrangea 'Deutschland' (votes unanimous), from Messrs. Endtz, Boskoop, Holland. A cerise-pink variety of large size borne in very big trusses.

To Hydrangea 'Mrs. Baardse' (votes unanimous), from Messrs. Endtz, Boskoop, Holland. This variety produces good trusses of medium-sized flowers of a bright cerise-pink colour and in some cases having the edges serrated.

To *Lupinus polyphyllus* 'Countess of March' (votes 14 for), from Mr. G. R. Downer, Chichester. A tall, handsome variety with flowers which are white when first open but later become shaded with mauve.

To Rose 'Hilda' (votes 18 for), from Messrs. B. R. Cant, Colchester. A well-shaped, full-flowered Hybrid Tea variety. The petals are pink on the inner side and carmine on the outer side.

To Rose 'Kersbergen' (votes unanimous), from Messrs. Cutbush, Barnet. A deep-crimson-scarlet bedding Rose of the perpetual polyantha type.

To *Viola cornuta* 'Jersey Gem' (votes unanimous), from Messrs. Watkins & Simpson, London. A useful dwarf variety suitable for the rock garden. It bears very large numbers of deep violet-blue flowers.

Other Exhibits.

Messrs. Allen, Norwich : Gaillardia 'Tangerine.'

E. A. Bowles, Esq., V.M.H., Waltham Cross : *Iris pallida* 'Myddelton Blue.' Selected for trial at Wisley.

Mrs. Bucknall, Doneraile : summer Violets.

Mr. A. Campbell, Pannal : seedling Iris.

Messrs. Carter, Raynes Park : Stock 'Rosy Morn.'

Messrs. Easlea, Leigh-on-Sea : Roses.

Major G. E. Gosling, Bicester : Carnation 'Helen of Stratton.'

C. A. Jardine, Esq., Chiswick : Iris 'Miss Jessop.'

Messrs. Kelway, Langport : Pyrethrums.

Messrs. S. Low, Enfield : Carnations.

Messrs. Lubbe, Oegstgeest, Holland : Pyrethrum 'Eileen May Robinson.' A.M., 1922.

Dr. S. A. Neave, Beaconsfield : Lupines.

F. C. Stoop, Esq., Byfleet : Carnations.

Suffolk Seed Stores, Woodbridge : Pyrethrum 'Kingston Early.'

Messrs. van Egmond, Oegstgeest, Holland : *Trollius* 'Commander-in-Chief,' selected for trial at Wisley, Pyrethrum 'Progression.'

Messrs. Waterer, Sons & Crisp, Twyford : Geum 'Fire Opal.'

Section B.

Mr. W. J. BEAN, V.M.H., in the Chair, and twenty-six other members present.

Awards Recommended:—

First-Class Certificate.

To *Azalea* 'John Jennings' (votes 8 for), from Lionel de Rothschild, Esq. Exbury. A free-flowering shrub with neat trusses of medium-sized flowers of a rich ruby-crimson colour.

To *Cornus florida* var. *rubra* (votes unanimous), from L. de Rothschild, Esq. A deciduous shrub bearing ovate-lanceolate leaves of a soft, light green colour. The clusters of minute flowers are freely produced and each is surrounded by four large bracts. The latter are white, heavily flushed and veined with bright pink.

To *Daphne aurantiaca* (votes 13 for, 4 against), from A. K. Bulley, Esq., Neston. One of Mr. G. Forrest's introductions, raised at Edinburgh, where it thrives in the open. It is a dwarf evergreen shrub with small, leathery leaves. The fragrant, bright yellow flowers are produced in pairs in the leaf-axils.

Award of Merit.

To *Aponogeton distachyon aldenhamense* (votes 12 for, 6 against), from the Hon. Vicary Gibbs, Elstree. This variety appears to be larger in all its parts than the type which it resembles in its floating, elliptical leaves and spikes of white, sweetly scented flowers.

To *Azaleodendron* 'Gallop Light' (votes unanimous), from Lionel de Rothschild, Esq., Exbury. A deciduous shrub bearing good trusses of salmon-rose flowers, spotted on the upper segments with deeper colour.

To *Cercis racemosa* (votes unanimous), from L. de Rothschild, Esq. This species resembles the better-known Judas-tree, *C. Siliquastrum*, but its flowers are smaller, of pale flesh-pink colour, and are produced in pendulous racemes. A native of China.

To *Clerodendron fragrans* (votes unanimous), from Sir Wm. Lawrence, Bt., Burford. This is by no means new to cultivation, although not widely grown. It is a warm greenhouse plant with large, deep green, pubescent leaves and corymbs of fragrant white flowers.

To *Cytisus* 'Lord Lambourne' (votes 10 for), from Messrs. W. Watson & Sons, Ltd., Killiney. A choice seedling Broom with primrose and crimson-coloured flowers.

To *Habranthus pratensis* (votes unanimous), from Mr. R. C. Notcutt, Woodbridge. A bulbous plant introduced in 1840. It is hardy in sheltered spots, where it produces its beautiful scarlet flowers in few-flowered umbels on stems about 2 feet high.

To *Lewisia rediviva* 'Winifred Herdman' (votes unanimous), from Mr. C. van Tubergen, jun., Haarlem. This is interesting as being one of the most xerophytic plants known. Its fleshy root system can withstand prolonged periods of drought. The leaves are linear and fleshy; the soft pink flowers nearly 3 inches across, on short stalks.

To *Magnolia nicholsomana* (votes unanimous), from Lady Aberconway and the Hon. H. D. McLaren, Bodnant. A deciduous Chinese species, with ovate leaves and flattish flowers about 4 inches in diameter, white, with purple stamens.

To *Pæony* 'Hiatt C. Baker' (votes 7 for), from Hiatt C. Baker, Esq., Almondsbury, Glos. The parentage of this hybrid *Pæony* is given as *P. Delavayi* × *P. lutea*. The flowers shown were small, roundish, and of a greenish-orange colour.

To *Pitcairnia aphelandraeflora* (votes unanimous), from Sir Wm. Lawrence, Bt., Burford. A small-growing Bromeliad with finely toothed, lanceolate leaves and racemes of bright scarlet flowers.

To *Primula microdonta* var. *alpicola* (votes unanimous), from Messrs. Oliver & Hunter, Moniaive. An interesting *Primula* of the Sikkimensis section collected by Captain Kingdon Ward (No. 5746) in S.E. Tibet in 1924. It has already proved itself invaluable for the stream-side or bog-garden. The 2-foot stalks bear great clusters of fragrant, creamy-yellow flowers, paler in colour than those of the nearly allied *P. florindae*.

To *Hypoxis Baurii* (white form) (votes 9 for), from Mrs. S. Garnett-Botfield, Albrighton. Shown as *Rhodohypoxis Baurii*. A rare S. African plant, producing a cluster of lanceolate leaves about 2 inches long and two or three solitary flowers on short stalks.

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To *Hypoxis Baurii* (rose form) (votes 7 for), from Mrs. S. Garnett-Botfield. Shown as *Rhodohypoxis rubella* and differing from the preceding only in the colour of its flowers.

To *Viburnum macrocephalum* (votes unanimous), from Lionel de Rothschild, Esq., Exbury. A deciduous Chinese species. Leaves small, ovate, dark green. Flowers sterile, white, like those of a *Hydrangea*.

To *Weinmannia trichosperma* (votes 12 for), from G. W. E. Loder, Esq., Ardingly. A tender shrub bearing pinnate, fern-like leaves and terminal racemes of small white flowers.

Other Exhibits.

Lady Aberconway and the Hon. H. D. McLaren, Bodnant : *Lewisia Finckii*, *Clintonia Andrewsii*.

H. Aldersey, Esq., Chester : *Cytisus* seedling.

Mrs. A. Bevan, Henley : *Eritrichium nanum*, *Geranium Furreri*.

A. K. Bulley, Esq., Neston : *Primula microdonia violacea*, *Felicia Bergiana*.

Messrs. Burkwood, Kingston : varieties of *Ceanothus*, *Cytisus*, etc.

Messrs. Cutbush, Barnet : *Berberis Thunbergii atropurpurea*.

Mrs. W. R. Dykes, Sutton Green : *Moraea spathacea*.

Mr. W. F. Higgins, Croydon : *Saxifraga tellimoides*.

G. H. Johnstone, Esq., Grampound Road : *Rhododendron* spp.

Mr. Gavin Jones, Letchworth : *Myosotis spathulata*

Sir Wm. Lawrence, Bt., Burford : *Pæony* 'La Lorraine,' *Olearia erubescens*, *Spharele Lindleyi*.

G. W. E. Loder, Esq., Ardingly : *Gunnern* sp., *Euthorbia Wulfenii*.

Messrs. Lubbe, Oegstgeest : *Trifolium repens quadrifolium*.

Mrs. Philip Martineau, Ascot : *Felicia Bergeriana*.

Mr. Amos Perry, Enfield : *Adiantum hybridum*, *Iris Purdyi*.

Mrs. Pilkington, Iechlade : *Tropaeolum majus* fl. pl.

Mrs. Powys Rogers, Devoran : *Cordylone indivisa vera*.

Messrs. Rogers, Southampton : *Cupressus obtusa nana tetragona minima*, *Dianthus alpinus rubicundus*.

Mrs. Roper, Chard : *Lathyrus pubescens*.

L. de Rothschild, Exbury : *Rhododendron aureum*.

Messrs. Russell, Brentwood : *Rhododendron rosea* fl. pl.

Messrs. Tucker, Oxford : *Saxifraga Colyledon platyphylla*.

Mr. W. H. Walters, Cheltenham : *Meconopsis aculeata* var., *Rodgersta pinnata* Elwes' var., *Meconopsis quintuplinervia* fl. pl., *Paeonia Woodwardii* var. *colesbornensis*.

Sir Oscar Warburg, Epsom : *Cistus parviflorus*.

Mr. A. M. Waterer, Woking : *Rhododendrons*.

Messrs. Watson, Killiney : *Cytisus* 'Sunset.'

Messrs. Wm. Wood, Taplow : *Primula farinosa*, *Beechwood* var.

FLORAL COMMITTEE, JUNE 8, 1927.

Section A.

Mr. H. B. MAY, V.M.H., in the Chair, and fifteen other members present.

Awards Recommended :—

Gold Medal.

To Messrs. Bolton, Halstead, for Sweet Peas.

To Messrs. Dobbie, Edinburgh, for Sweet Peas.

Silver Bankstan Medal.

To Messrs. Barr, Taplow, for Irises and Lupines.

To Messrs. Bath, Wisbech, for Lupines, Pyrethrums and other plants.

To Messrs. Cuthbert, Southgate, for Tritonia 'Prince of Orange.'

To Mr. H. J. Jones, Lewisham, for Hydrangeas.

To Messrs. Kelway, Langport, for Delphiniums and Pæonies.

To Messrs. Ladhams, Southampton, for herbaceous plants.

To the Orpington Nurseries, Orpington, for Irises.

To Messrs. Prichard, Christchurch, for herbaceous plants.

To Messrs. Sutton, Reading, for Streptocarpus.

Banksian Medal.

- To Messrs. Allwood, Haywards Heath, for Carnations.
- To Messrs. Baker, Codsall, for Lupines.
- To the Chalk Hill Nurseries, Reading, for herbaceous plants.
- To Messrs. Cheal, Crawley, for Dahlias.
- To Messrs. Engelmann, Saffron Walden, for Carnations.
- To Mr. Gavin Jones, Letchworth, for herbaceous plants.
- To Mr. J. H. Pemberton, Havering, for Roses.
- To Messrs. Pearson, Lowdham, for Aquilegias.
- To Messrs. Redgrove, Borough Green, for Lupines.
- To Messrs. Stewart, Wimborne, for herbaceous plants.
- To Mr. W. J. Unwin, Histon, for Poppy 'Coonara Pink.'
- To Messrs. Wallace, Tunbridge Wells, for Irises.
- To Messrs. Waterer, Sons & Crisp, Twyford, for Irises.

Award of Merit.

- To Pyrethrum 'Marjorie Robinson' (votes 14 for), from Mr. H. Robinson, Hinckley. A good deep rose-pink single variety with very broad ray florets.
- To Pyrethrum 'Scarlet Glow' (votes unanimous), from Mr. H. Robinson, Hinckley. A bright crimson-scarlet single variety with broad ray florets and a prominent golden centre. The flowers are large and are held erect on long stems.

The awards recommended to Aquilegias on trial at Wisley were confirmed.

Other Exhibits.

- J. H. Batty, Esq., Chorley Wood : Hydrangeas.
- Messrs. Blackmore & Langdon, Bath : Delphiniums.
- Messrs. Carrington, Derby : *Alyssum maritimum* 'Pride of the Peak.'
- Messrs. Clark, Dover : herbaceous plants.
- The Earl of Darnley, Horley : Lupine 'The Pearl'
- Messrs. Godfrey, Exmouth : *Campanula persicifolia* 'Pride of Exmouth.'
- Mrs. Grisdale, Feltham Hill : Iris 'Mrs Grisdale'
- The Rt. Hon. Lord Lambourne, G.C.V.O., Romford : Pæony 'Gloire de Nancy.'
- Lady Katherine Meade, Bagshot : Carnation 'Mauve Dawn.'
- Mr. G. Prince, Oxford : Roses.

Section B.

Mr. G. W. E. LODER, M A , F L S., in the Chair, and thirteen other members present.

Awards Recommended :—***Silver Banksian Medal.***

- To Mr. Amos Perry, Enfield, for Liliiums, Irises, etc.
- To Capt. Symons-Jeune, Old Windsor, for Saxifragas.
- To Messrs. Tucker, Oxford, for alpine plants.

Banksian Medal.

- To Messrs. Bunyard, Maidstone, for Roses.
- To Messrs. Elliott, Stevenage, for alpine plants.
- To Mr. Gavin Jones, Letchworth, for a rock garden.
- To Messrs. Maxwell & Beale, Broadstone, for alpine plants.
- To Messrs. Rogers, Southampton, for alpine plants.
- To Messrs. Wallace, Tunbridge Wells, for shrubs.
- To Mr. F. G. Wood, Ashted, for alpine plants.

First-class Certificate.

To *Meconopsis Baileyi* (votes unanimous), from Lady Aberconway and the Hon. H. D. McLaren, Bodnant. This beautiful species received an Award of Merit on April 7, 1926 (see JOURNAL, vol. 52, p. xlix).

Award of Merit.

To *Caesalpinia Gilliesii* (votes unanimous), from J. Scott, Esq., Balham. A rather tender shrub requiring winter protection in most districts. The leaves are finely divided, and the numerous rather dull yellow flowers are made more conspicuous by their long red stamens.

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To *Deutria discolor stellata* (votes 10 for), from Lt.-Col. L. C. R. Messel, Handcross. A very good variety of a well-known shrub. The pale pink flowers are borne in long racemes.

To *Erica Tetralix alba mollis* (votes 7 for, 1 against), from Messrs. D. Stewart & Sons Ltd., Ferndown. A white-flowered variety of the cross-leaved Heath. Even when not in flower the plant is attractive, the tiny leaves being covered with white down.

To *Gaultheria oppositifolia* (votes unanimous), from G. W. E. Loder, Esq., Ardingly. A tall-growing species from New Zealand. The leaves are dark green, $1\frac{1}{2}$ inch long and one-third as wide, and the white flowers are borne in terminal racemes.

To *Iris hybrida* 'Margot Holmes' (votes 8 for, 1 against), from Mr. Amos Perry, Enfield. A hybrid between *I. chrysographes* and *I. Douglasiana*. The plants shown were about a foot high, with many flowers of a rich purple colour, the falls marked with the golden streaks of *I. chrysographes*.

To *Nomocharis saluenensis* (votes unanimous), from Lady Aberconway and the Hon. H. D. McLaren. Only one small plant was shown, and this bore a solitary flower. This was of flattish form, pink, with olive-coloured markings near the centre and greenish stamens.

To *Zephyranthes* 'Rose of Burford' (votes unanimous), from Sir Wm. Lawrence, Burford. The parents of this hybrid are *Z. verecunda* and *Z. carinata*. The buds are pink, and the expanded flowers almost white, flushed with a delicate shade of pink.

Other Exhibits.

Lady Aberconway and the Hon. H. D. McLaren, Bodnant : *Lilium* sp.
Messrs. Clark, Dover : alpine plants.
Messrs. Elliott, Stevenage : alpine plants.
Dr. Giuseppi, Felixstowe : *Jankaea Heldreichii*.
Misses Hopkins, Coulsdon : rock plants.
C. Ingram, Esq., Benenden : *Rhododendron mucronulatum* f. *Sekedara*.
Mr. J. Klinkert, Richmond : clipped trees.
Messrs. Ladhams, Southampton : *Phlomis fruticosa* 'B. Ladhams.'
Lt.-Col. L. C. R. Messel, Handcross : species of *Calceolaria*, *Iris* and *Lonicera*.
The Hon. Mrs. Sebag Montifiori, Plymouth : *Escallonia Ixardii*.
Mr. R. C. Notcutt, Woodbridge : *Cytisus scoparius fulgens*.
Mr. Amos Perry, Enfield : *Iris* hybrids, *Lilium concolor* 'Dropmore variety.'
Messrs. Stewart, Ferndown : Heaths and alpine plants.
Messrs. Wallace, Tunbridge Wells : *Asalea spectabilis rosea*, *Rhododendron* 'Black Knight.'

FLORAL COMMITTEE, JUNE 21, 1927.

Section A.

Mr. H. B. MAY, V.M.H., in the Chair, and eleven other members present.

Awards Recommended :—

Gold Medal.

To Messrs. Blackmore & Langdon, Bath, for Delphiniums.

Silver Banksian Medal.

To Messrs. Allwood, Haywards Heath, for Carnations.

To Messrs. Barr, Taplow, for Irises.

To Messrs. Dobbie, Edinburgh, for Sweet Peas.

To Messrs. Kelway, Langport, for Delphiniums.

To Messrs. S. Low, Enfield, for Carnations.

To Messrs. Peed, West Norwood, for stove and greenhouse plants.

To Messrs. Prichard, Christchurch, for herbaceous plants.

To Messrs. Sutton, Reading, for Streptocarpus.

Banksian Medal.

To Messrs. Baker, Codsall, for herbaceous plants.

To Messrs. Bath, Wisbech, for Pæonies and Delphiniums.

To Messrs. Bide, Farnham, for Sweet Peas.

To Messrs. B. R. Cant, Colchester, for Roses.

To Mr. T. Carlile, Twyford, for Delphiniums.

To Chalk Hill Nurseries, Reading, for herbaceous plants.

To Messrs. Cheal, Crawley, for Dahlias.
 To Messrs. Clark, Dover, for herbaceous plants.
 To Messrs. Engelmann, Saffron Walden, for Carnations.
 To Mr. C. H. Herbert, Birmingham, for Pinks.
 To Mrs. Carl Holmes, Welwyn, for Gerberas.
 To Messrs. Ladhams, Southampton, for herbaceous plants.
 To Mr. Longford, Abingdon, for Pinks, Delphiniums and Poppies.
 To Mr. J. H. Pemberton, Havering, for Roses.
 To Messrs. L. R. Russell, Richmond, for stove plants.
 To Messrs. Stewart, Wimborne, for Irises and Gladioli.
 To Messrs. Tucker, Oxford, for herbaceous plants.
 To Mr. W. J. Unwin, Histon, for Poppies.
 To Messrs. Wallace, Tunbridge Wells, for herbaceous plants.
 To Mr. W. Wells, jun., Merstham, for herbaceous plants.
 To Messrs. Wood, Taplow, for herbaceous plants.

Award of Merit.

To *Alstroemeria haemantha* 'B. Ladhams' (votes 8 for), from Messrs. Ladhams, Southampton. A striking plant for the border or for cutting. It is derived from *A. haemantha rosea* and has soft pink flowers lightly striped with reddish-brown.

To Pæony 'Globe of Light' (votes unanimous), from Messrs. Kelway, Langport. A deep rose-pink single variety with a large central bunch of yellow filaments.

To Pæony 'Orion' (votes unanimous), from W. B. Cranfield, Esq., Enfield Chase. A free-flowering variety growing 4 feet 6 inches high. It is a seedling from an imported variety named 'Emperor,' and has rich ruby-crimson single flowers with a mass of yellow filaments splashed with the colour of the petals.

Selected for trial at Wisley.

Pinks 'Princess Elizabeth' and 'Othello' from Mr. C. H. Herbert, Birmingham.
 Rose 'Abol' from Chalk Hill Nurseries, Reading.

Other Exhibits.

F. Beinder, Esq., Great Bookham: seedling Dianthus.
 Major H. A. S. Bridge, Exmouth: seedling Dianthus.
 Messrs. H. Den Ouden, Boskoop: *Aster subaeolus* 'Den Ouden's Glory.'
 Lady Derby, Sunningdale: Carnation 'Val.'
 Mr. C. A. Jardine, Chiswick: Roses.
 Messrs. S. Low, Enfield: Rose 'Fragrance of Jarvisbrook.'
 Mr. A. Perry, Enfield: Gerbera 'Mrs. Carl Holmes.'
 Messrs. Russell, Richmond: Adiantum 'Glory of Moordrecht' roseum.

Section B.

Mr. G. W. E. LODER, M A , F.L.S., in the Chair, and nineteen other members present.

Awards Recommended:—

Silver Banksian Medal.

To the Donard Nursery Co., Co. Down, for shrubs.
 To Mr. Amos Perry, Enfield, for Lilies, etc.
 To Mr. G. Reuthe, Keston, for shrubs.

Banksian Medal.

To Messrs. Bunyard, Maidstone, for Roses.
 To Messrs. Maxwell & Beale, Broadstone, for alpine plants.
 To Mr. J. Robinson, New Eltham, for alpine plants.
 To Messrs. Waterer, Sons & Crisp, Twyford, for alpine plants.

Award of Merit.

To *Azalea Benikirin* (votes 10 for), from Mr. Amos Perry, Enfield. A dwarf Japanese Azalea bearing semi-double, bright-salmon flowers of good size.

To *Calceolaria filicaulis* (votes 8 for, 1 against), from Messrs. Elliott, Stevenage. A species collected in the recent Andean expedition by Mr. H. F. Comber. It forms rosettes of grey-green foliage from which rise slender, leafless panicles of small golden-yellow flowers.

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To *Cytisus* × *cyprius immaculatus* (votes unanimous), from Sir Wm. Lawrence, Bt., Burford. *C. × cyprius* is an evergreen shrub with narrow, bright-green leaves and clusters of large, white, crimson-blotched flowers. In the present variety the flowers are white, flushed with yellow in the centre.

To *Escallonia* 'Donard Gem' (votes 8 for, 4 against), from the Donard Nursery Co. This is a *langleyensis* seedling, bearing numerous flowers of a pleasing pale rose colour.

To *Lilium concolor*, Dropmore var. (votes unanimous), from Mr. Amos Perry, Enfield. *L. concolor* is a dwarf-growing Lily with bright-scarlet flowers which received the Society's F.C.C. thirty years ago. The present variety is said to be a more vigorous grower, but the flowers are similar to those of the type.

Other Exhibits.

C. Hiatt Baker, Esq., Almondsbury : *Gentiana Waltoni*.
Donard Nursery Co., co. Down : shrubs and Primulas.
Messrs. Elliot, Stevenage : *Digitalis dubia*.
Misses Hopkins, Coulsdon : rock plants.
Mrs. Walter Jones, Cowrie : *Pentstemon alpinus*.
Messrs. Ladhams, Southampton : *Rosa Wichuraiana nana*.
Sir Wm. Lawrence, Bt., Burford : *Indigofera amblyantha*.
Mr. Klinkert, Richmond : clipped trees.
C. T. Musgrave, Esq., Godalming : *Cnicus Falconeri*.
Messrs. Russell, Richmond : *Lilium sutchuenense*.
F. C. Stern, Esq., Goring : *Cordyline Banksii*.
Messrs. Stewart, Ferndown : shrubs.
Messrs. Wallace, Tunbridge Wells : *Azalea* 'Misomomo-Giri.'

FLORAL COMMITTEE, JUNE 28, 1927.

Section A.

AT THE AMATEUR SHOW.

Mr. H. B. MAY, V.M.H., in the Chair, and fifteen other members present.

No awards were recommended on this occasion.

Exhibits.

Col. E. H. Bedford Pim, Shrivenham : Carnations 'Francis H. Bedford Pim' and 'Miss Beryl Lambert.'

W. C. Blakeway, Esq., Droitwich : Delphinium 'Lord Doverdale.'

Mrs. John Hayes, Market Drayton : Poppy 'Mrs. John Hayes.'

T. W. Wilson, Esq., Neilston : seedling Violas, Violettas and Pansies.

Section B.

Mr. T. HAY, V.M.H., in the Chair, and twelve other members present.

Awards Recommended :—

Award of Merit.

To *Eucomis bicolor* (votes unanimous), from Mrs. Carl Holmes, Welwyn. An interesting Liliaceous species. From the basal rosette of pale-green elliptical leaves rises a dense spike of greenish, violet-edged flowers, crowned by a terminal tuft of bracts.

To *Philadelphus* 'Atlas' (votes 6 for), from Sir Wm. Lawrence, Bt., Burford. A beautiful variety with very large, broad-petalled white flowers of good substance, borne in rather short lateral sprays.

To *Veronica Matthewsii* (votes unanimous), from Messrs. R. Wallace & Co., Tunbridge Wells. A shrubby variety of graceful habit. Leaves small, lanceolate ; flowers white, opening pale lilac, produced in numerous axillary racemes.

Other Exhibits.

Sir Wm. Lawrence, Bt., Burford : *Cooperanthes* × 'Mrs. Giraud.'
Major Pam, Broxbourne : *Hippeastrum* sp.
Capt. Symons-Jeune, Old Windsor : *Saxifraga* 'Tumbling Waters.'
Messrs. Wallace, Tunbridge Wells : *Veronica Barkeri*.

ORCHID COMMITTEE.

JANUARY 11, 1927.

Sir JEREMIAH COLMAN, Bt., in the Chair, and sixteen other members present.

Awards Recommended:—

Gold Medal.

To George F. Moore, Esq., Chardwar, Bourton-on-the-Water, Glos., for a superb group of *Cypripedium* hybrids.

Silver-gilt Banksian Medal.

To H. T. Pitt, Esq., Rosslyn, Stamford Hill, for species and hybrids.

To Messrs. Charlesworth, Haywards Heath, for various Orchids.

Silver Banksian Medal.

To Messrs. Black & Flory, Slough, for *Cattleya* hybrids.

To Messrs. Sanders, St. Albans, for uncommon species.

To Messrs. Cowan, Southgate, for winter-flowering hybrids.

Bronze Banksian Medal.

To Messrs. Stuart Low, Jarvisbrook, Sussex, for choice hybrids.

Vote of Thanks.

To Sir Jeremiah Colman, Bt., Gatton Park, Surrey, for interesting rare species.

First-class Certificate.

To *Odontoglossum* × 'Vivien' (parentage unrecorded) (votes 10 for), from H. T. Pitt, Esq., Rosslyn, Stamford Hill. A beautiful hybrid of the *eximium* section. The spike bore thirteen large flowers, white, with reddish-purple blotches.

To *Cypripedium* × 'Chardmoore' var. 'Perfection' ('Lena' × 'Christopher' var. 'Grand Duke Nicholas') (votes 10 for, 4 against), from George F. Moore, Esq. A very large flower in which the dorsal sepal is porcelain-white, with dark purple spotting arranged in vertical lines, the petals greenish-yellow with brown reticulation.

Award of Merit.

To *Cypripedium* × 'Hancar' var. 'George Corser' ('Conference' × 'Major Hanbury Carlile') (votes 14 for), from George F. Moore, Esq. In this flower the roundly formed dorsal sepal is white, with a small greenish base, the petals and lip honey-yellow.

To *Cypripedium* × 'Chardmoore' var. 'W. H. Page' ('Lena' × 'Christopher' var. 'Grand Duke Nicholas') (votes 12 for), from George F. Moore, Esq. The dorsal sepal of this hybrid is unusually large, white, with light spotting on the central area and green at the base, petals broadly developed, suffused and veined with brown.

To *Cypripedium* × 'Judah,' Westonbirt var. ('Alabaster' × 'Bronzino') (votes 11 for, 3 against), from Messrs. H. G. Alexander, Tetbury, Glos. The dorsal sepal is crimson-flushed, bordered with white, the petals yellowish, tinged at the apical end with violet, the labellum shaded with light reddish-brown.

To *Cypripedium* × 'Renown' ('Eurybiades' × 'Christopher') (votes 11 for), from Messrs. Charlesworth, Haywards Heath. A showy flower of large size, the dorsal sepal flatly displayed, the upper two-thirds white, the base greenish and with slight spotting, petals yellowish, with brownish markings.

To *Sophrolaelocattleya* × 'Isabella' var. *perfecta* (C. × 'Fabia' × S.-c. × 'Marathon') (votes 12 for), from Messrs. Cowan, Southgate, N. A charming flower of delicate cerise in the sepals and petals, the labellum bordered with crimson and with a golden centre.

Odontonia × *Joicey* var. 'Aleppo' (*Odontonia* × *Pittias* × *Odontoglossum* 'Tityus') (votes 13 for), from Messrs. Charlesworth, Haywards Heath. Of rich colour, the petals deep mauve-purple, the expanded labellum bright purple with a lilac tinge.

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Preliminary Commendation.

To *Vuylstekeara* × 'Elatior' (*Vuylstekeara* × 'Aspasia' × *Odontoglossum* × 'Miguelito'), from Messrs. Charlesworth. An immature seedling with a flower of soft cerise slightly tinged with rose.

Bronze Lindley Medal.

To Mr. F. W. Thurgood, Orchid grower to H. T. Pitt, Esq., Rosslyn, Stamford Hill, N., for *Eulophiella* × *Rolfet* (*Elizabethae* × *Peetersiana*) with an erect spike of thirty buds and flowers.

Cultural Commendation.

To Mr. John Evans, Colwyn Bay, for a fine specimen of *Cypripedium* × *nitens-Leeanum* var. *Becktoniae*, with seventeen flowers.

Other Exhibits.

Messrs. J. Cypher, Cheltenham : an extensive group of *Cypripedium* hybrids. Mr. Harry Dixon, Spencer Park Nursery, Wandsworth Common ; *Odontioda* × 'Joan' and *Odontoglossum* × *Wilckeanum aureum*.

Messrs. A. J. Keeling, Bradford : several finely grown *Cypripedium* hybrids. Baron Bruno Schröder, The Dell, Englefield Green, Surrey : ten magnificent spikes of *Calanthe* × *Sedenii* var. *Harrisii*, with numerous pure white flowers.

Lady Leon, Bletchley Park, Bletchley : a hybrid *Cypripedium* obtained by crossing 'Hercules' with 'Pixie.'

ORCHID COMMITTEE, JANUARY 25, 1927.

Sir JEREMIAH COLMAN, Bt., in the Chair, and eleven other members present.

Awards Recommended :—

Silver Banksian Medal.

To H. T. Pitt, Esq., Rosslyn, Stamford Hill, for species and hybrids.

To Messrs. Cowan, Southgate, for *Oncidiums* and *Cypripediums*.

To Messrs. Stuart Low, Jarvisbrook, Sussex, for *Cattleya* hybrids.

Vote of Thanks.

To Sir Jeremiah Colman, Gatton Park, Surrey, for group including *Sophranitis Lowii*, with twenty-five yellow flowers.

First-class Certificate.

To *Cattleya* × 'John Henry,' Dell Park var. ('Astron' × 'Lady Rowena') (votes unanimous), one of the finest of white *Cattleyas*. Flowers large, of excellent form and texture, pure white, except for some yellow in the throat of the labellum.

To *Odontonia* × 'Nubia' var. 'Renown' (unanimous), (*M. Charlesworthii* × *O.* × 'Doreen') from Messrs. Charlesworth, Haywards Heath. Sepals and petals rich velvety crimson, the labellum showing the same colour but more or less broken up in speckled style.

Award of Merit.

To *Cymbidium* × 'Atalanta,' Brockhurst var. (*erythrostylum* × *Alexanderi*) (votes 7 for, 1 against), from F. J. Hanbury, Esq., Brockhurst, East Grinstead. The spike bore thirteen flowers, bronze-yellow, the labellum with a crimson front lobe and lines of similar colour on the side lobes.

Other Exhibits.

Messrs. Charlesworth, Haywards Heath : *Pleurothallis tridentata*, *Wilsonara* × 'Wendy,' and *Bulbophyllum saltatorium* with a feather-like and mobile lip.

Messrs. Sanders, St. Albans : *Cymbidium* × 'Erica,' with a spike of eleven greenish flowers, and *Brassocattleya* × 'Albion.'

Messrs. Sutton Bros., Hassocks : two distinct varieties of *Cypripedium* × 'Perseus.'

Baron Bruno Schröder : *Cymbidium* × 'Dorothy,' a novelty with flowers of cream colour tinged with light green.

Messrs. A. J. Keeling, Westgate Hill, nr. Bradford : *Cypripedium* × 'Virginia' (*aureum* × *Farricranum*), and *C.* × 'Tigris' *magnificum*.

ORCHID COMMITTEE, FEBRUARY 9, 1927.

Sir JEREMIAH COLMAN, Bt., in the Chair, and twenty other members present.

Awards Recommended :—

Gold Medal.

To Messrs. Charlesworth, Haywards Heath, for group.

Silver-gilt Banksian Medal.

To Messrs. Sanders, St. Albans, for group.

Silver Banksian Medal.

To H. T. Pitt, Esq., Stamford Hill, for group.

To Messrs. McBean, Cooksbridge, Sussex, for hybrids.

To Messrs. H. G. Alexander, Ltd., Westonbirt, Tetbury, Glos., for Cattleyas and *Cypripediums*.

Bronze Banksian Medal.

To Messrs. Armstrong & Brown, Tunbridge Wells, for specimen plants of *Laeliocattleya* × *Schroederæ*.

To Messrs. Cowan, Southgate, for *Odontoglossums* and *Cypripediums*.

To Messrs. Cypher & Sons, Cheltenham, for *Cypripedium* hybrids.

To Messrs. Stuart Low, Jarvisbrook, Sussex, for group.

To Messrs. Sutton Bros., Hassocks, for group.

To Mr. Harry Dixon, Wandsworth Common, for *Dendrobiums* and *Cymbidiums*.

First-class Certificate.

To *Cypripedium* × 'Mrs. Eley' var. 'W.G.' ('Christopher' × 'Commodore') (votes unanimous), from Geo. F. Moore, Esq., V.M.H., Chardwar, Bourton-on-the-Water, Glos. Flower of large size, dorsal sepal mainly white, green at the base, margin slightly crisped; petals yellowish green, with brownish markings, undulated at the margin; labellum elongated.

To *Cattleya* × *Edithæ* var. 'White Empress' (*Trianae* × 'Suzanne Hye') (votes 16 for), from F. J. Hanbury, Esq., Brockhurst, East Grinstead. A finely formed flower of large size, pure white, except for some yellow in the throat portion of the labellum.

Award of Merit.

To *Cypripedium* × 'Seekon' var. 'Biddy' (*viridissimum* × 'Christopher') (votes 10 for, 3 against), from Geo. F. Moore, Esq., V.M.H. An elegant hybrid, with the large dorsal sepal roundly formed, petals very broad, pale apple-green, with a median line of brown-purple.

To *Cypripedium* × 'Robert Paterson' var. 'Westminster' ('Memoria F. M. Ogilvie' × 'Eurybiades') (votes 12 for, 3 against), from H. T. Pitt, Esq., Stamford Hill. The flower has heavy spotting on the dorsal sepal, the broad petals shaded with mahogany-red, the labellum tinged with similar colour.

To *Cymbidium* × 'Erica' var. 'Goldilocks' (*grandiflorum* × *Pauwelsii*) (votes 13 for), from Messrs. Sanders. Flowers light greenish-yellow, the lip deeper yellow marked with brown.

To *Vuykisteheara* × 'Leda' (*V.* × *Brewii* × *O.* × 'Radiant') (votes 16 for), from Messrs. Charlesworth, Haywards Heath. The chief feature is the well-developed labellum, with crimson spots on a rose ground.

Preliminary Recognition.

To *Odontoglossum* × *Armstrongii*, Gerrish's var. (parentage unrecorded) (votes unanimous), from R. Gerrish, Esq., Milford Manor, Salisbury. A very distinct flower of orange-yellow colour with a soft reddish tinge, the lip with a white apex.

Cultural Commendation.

To Messrs. Armstrong & Brown, for *Laeliocattleya* × *Schroederæ* var. 'Imperator,' bearing twenty-one flowers.

To Messrs. Sanders, St. Albans, for *Cymbidium* × 'Ceres,' with six spikes and a total of eighty-seven large flowers.

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Other Exhibits.

Messrs. A. J. Keeling & Sons, Westgate Hill, nr. Bradford: *Mormodes Wendlandii*, from Costa Rica, and several *Cypripedium* hybrids.

Messrs. Black & Flory, Slough: *Cypripedium* × 'Golden Wren' and *Sophrocattleya* × *Wellesleyae*.

R. Gerrish, Esq.: *Odontioda* × 'Gwendoline,' of rich colour, and *Odontoglossum* × *Jamesianum*.

ORCHID COMMITTEE, FEBRUARY 22, 1927.

Sir JEREMIAH COLMAN, Bt., in the Chair, and seventeen other members present.

Awards Recommended :—

Silver-gilt Banksian Medal.

To Messrs. Charlesworth, Haywards Heath, for species and hybrids.

Silver Banksian Medal.

To H. T. Pitt, Esq., Rosslyn, Stamford Hill, for group.

To Messrs. McBean, Cooksbridge, Sussex, for species and hybrids.

To Messrs. Stuart Low, Jarvisbrook, Sussex, for hybrids.

Bronze Banksian Medal.

To Messrs. Sanders, St. Albans, for group of species.

To Mr. Harry Dixon, Wandsworth Common, for group of hybrids.

Award of Merit.

To *Cattleya* × 'Prince Shimadzu' var. 'Springtide' ('Tityus' × *Hardyana*) (votes unanimous), from H. T. Pitt, Esq. A pleasing creamy-white flower, the lip tinged with rose-purple near the apex and having an extensive yellow area on the disc.

To *Dendrobium* × 'Merlin' var. *Armstrongiae* (*nobile* var. 'Sir F. W. Moore' × 'Queen of Gatton') (votes unanimous), from Messrs. Armstrong & Brown, Tunbridge Wells. Flowers deep purple, the lip with a dark maroon blotch surrounded by a light buff zone.

To *Cymbidium* × 'Erica' var. 'Orbis' (*grandiflorum* × *Pauwelsii*) (votes 14 for), from Messrs. Sanders, St. Albans. Flowers thick, light greenish-yellow, the lip white with some brownish markings near the margin.

Other Exhibits.

Messrs. Black & Flory: *Cypripedium* × 'Mona' and *Sophrolaeliocattleya* × 'Vulcan.'

Messrs. Cowan, Southgate: *Cirrhopetalum picturatum*, and *Odontoglossum* × *southgatense*.

Baron Bruno Schröder, Englefield Green, Surrey: *Brassolaeliocattleya* × *Ballantineana* (C. 'Sunbeam' × *B.-l.-c.* × 'The Baroness'), a novelty with yellowish flowers.

ORCHID COMMITTEE, MARCH 8, 1927.

C. J. LUCAS, Esq., in the Chair, and nineteen other members present.

Awards Recommended :—

Gold Medal.

To Messrs. H. G. Alexander, Ltd., Westonbirt, Tetbury, Glos., for *Cymbidium* hybrids.

To Messrs. McBean, Cooksbridge, Sussex, for well-cultivated hybrids.

Silver-gilt Banksian Medal.

To Messrs. Sanders, St. Albans, for various Orchids.

To Messrs. Charlesworth, Haywards Heath, for hybrids.

To Messrs. Cowan, Southgate, for various Orchids.

Silver Banksian Medal.

To Messrs. Armstrong & Brown, Tunbridge Wells, for *Dendrobiums*.

Bronze Banksian Medal.

To Messrs. Stuart Low, Jarvisbrook, Sussex, for *Dendrobiums* and *Brassocattleyas*.

To Mr. Harry Dixon, Wandsworth Common, for hybrids.

To Messrs. Sutton Bros., Hassocks, for species and hybrids.

First-class Certificate.

To *Cymbidium* × 'Flamingo' var. 'Memoria Sir Geo. Holford' (*Alexanderi* × 'Merlin') (votes unanimous) from Messrs. H. G. Alexander, Tetbury, Glos. A beautiful hybrid of outstanding merit. The spike bore five large flowers, the segments broadly developed, white, with some rose tinting, the labellum with a crimson-red zone on the front lobe, the column rose-coloured. A *Silver Lindley Medal* was also awarded.

To *Odontioda* × 'Frederick J. Hanbury' (parentage unrecorded) (votes unanimous), from Messrs. McBean. A very showy plant bearing a remarkable inflorescence of sixty-one well-formed reddish-scarlet flowers, the labellum with some yellowish areas. A *Silver Lindley Medal* was also awarded.

Award of Merit.

To *Cymbidium* × 'Rosanna' ('Kittiwake' × *Alexanderi*) (votes unanimous), from Messrs. H. G. Alexander, Ltd. Delicate blush, the labellum shaded with dull rose and marked with crimson spots.

To *Odontioda* × *Putias* var. 'Empress' (*Oda.* 'Juliet' × *Odm.* 'St. James') (votes unanimous), from Messrs. Charlesworth. A seedling of considerable promise, flowers large, petals unusually well developed, with rose ground and reddish blotching.

To *Cattleya* × 'Thora,' Brockhurst var. ('Empress Frederick' × 'Mrs. Pitt') (votes unanimous), from F. J. Hanbury, Esq., Brockhurst, East Grinstead. The flower has flat crimson-rose segments, the labellum golden-yellow in the centre.

To *Miltonia* × 'Beau Brummell' var. *superbissima* (*Bleuana* × 'Venus') (votes unanimous), from Messrs. Charlesworth. Flowers rich velvety crimson, the labellum with rose-tinted base and yellowish crest.

Vote of Thanks.

To Sir John F. Ramsden, Bt., Bulstrode, Gerrards Cross, Bucks, for *Lissochilus Krebsii*, brought home by him from Kenya in 1926.

Other Exhibits.

A. R. Wilson-Wood, Esq., Timsbury Manor, nr. Romsey, Hants: well-flowered *Dendrobium* species and hybrids.

F. J. Hanbury, Esq.: *Laeliocattleya* × 'Don Juan,' with a rich purple lip.

Messrs. Black & Flory, Slough: *Laeliocattleya* × 'Colleen' (*L.-c.* × 'Gladiator' × *C. Trianae*) and *L.-c.* × 'Monitor' (*L.-c.* × 'Rex' × *C.* × 'Clotho').

ORCHID COMMITTEE, MARCH 23, 1927.

C. J. LUCAS, Esq., in the Chair, and fifteen other members present.

*Awards Recommended:—**Silver-gilt Banksian Medal.*

To Messrs. Charlesworth, Haywards Heath, for group.

To Messrs. Sanders, St. Albans, for *Cymbidiums*.

Silver Banksian Medal.

To Messrs. Cowan, Southgate, for group.

To Messrs. Stuart Low, Jarvisbrook, Sussex, for group.

First-class Certificate.

To *Sophrolaeliocattleya* × 'Mikado' (*S.-l.-c.* × 'Prince Hirohito' × *C.* × 'Empress Frederick') (votes 12 for, 2 against), from Baron Bruno Schröder, The Dell Park, Englefield Green, Surrey. A beautiful round flower, light terracotta tinged with rose, the lip rosy-crimson and with a golden throat.

To *Brassocattleya* × 'Mrs. Robert Paterson' var. 'Titanic' (*B.-c.* × *Cliftonii* × *C.* × 'Clotho') (votes unanimous), from Messrs. Black & Flory, Slough. A grand flower of large size and with all the segments broadly developed, rosy-mauve, the labellum purplish-mauve, with the margin crisped and fringed.

Award of Merit.

To *Brassolaeliocattleya* × 'Irma' var. *grandiflora* (B.-J.-c. × 'The Baroness' × L.-c. × 'Golden Queen') (votes unanimous), from Baron Bruno Schröder. Sepals and petals clear bright yellow, the labellum cerise with delicate veining.

To *Odontoglossum* × *plumptonense* var. 'Senator' (*amabile* × *Lambeauiantum*) (votes 8 for), from F. J. Hanbury, Esq., Brockhurst, East Grinstead. The plant bore a spike of fourteen large flowers in which the segments are thickly spotted with bright lilac-rose.

To *Odontoglossum* × 'Trident' var. *rubrum* (*eximium* × 'King Albert') (votes unanimous), from Messrs. Charlesworth, Haywards Heath. The spike bore five flowers, blotched with crimson-purple over the greater part of the segments.

To *Odontoglossum* × *crispo-Solon* var. 'Perfection' (*crispum* × 'Solon') (votes 8 for, 3 against), from J. J. Bolton, Esq., Claygate, Surrey. Flowers massive, thick in texture, and with crimson-red blotching.

Other Exhibits.

Mr. Harry Dixon, Wandsworth Common : *Cypripediums* and *Cymbidium*s.

Messrs. Black & Flory, Slough : *Brassocattleya* × 'Mrs. Robert Paterson.'

Messrs. H. G. Alexander, Ltd. : *Laeliocattleya* × 'Queen Mary' var. 'Radiance,' and other hybrids.

F. J. Hanbury, Esq. : *Cattleya* × 'Titrianae,' which has already received an F.C.C.

ORCHID COMMITTEE, APRIL 5, 1927.

C. J. LUCAS, Esq., in the Chair, and sixteen other members present.

Awards Recommended :—

Gold Medal.

To R. Gerrish, Esq., Milford Manor, Salisbury, for group of hybrids.

To Baron Bruno Schröder, The Dell Park, Englefield Green, Surrey, for group of *Dendrobium plumptonense* (*Cybele* × *nobile*) and *D. Thwaitesiae*, Veitch's var.

Silver-gilt Banksian Medal.

To Messrs. Charlesworth, Haywards Heath, for group.

To Messrs. H. G. Alexander, Ltd., Tetbury, Glos., for hybrids.

Silver Banksian Medal.

To Messrs. Sanders, St. Albans, for species and hybrids.

To Messrs. Cowan, Southgate, for *Cymbidium* hybrids.

To Ernest R. Ashton, Esq., Camden Park, Tunbridge Wells, for species and hybrids.

To Messrs. Stuart Low, Jarvisbrook, Sussex, for group.

Bronze Banksian Medal.

To Messrs. Sutton Bros., Hassocks, Sussex, for *Dendrobium*s, etc.

To Messrs. Cypher, Cheltenham, for species and hybrids.

To Mr. Harry Dixon, Wandsworth Common, for group.

Silver Lindley Medal.

To *Odontoglossum* × 'Purple Emperor' ('The Czar' × 'Dusky Monarch'), shown by the Executors of the late H. T. Pitt, Esq. A noble hybrid generally considered as one of the finest of its class, and to which an F.C.C. was awarded in 1922.

First-class Certificate.

To *Cymbidium* × *Pauwelsii*, Ankersmit's var. (*insigne* × *Lowianum*) (votes unanimous), from Messrs. Cowan, Southgate. The largest and finest form of this hybrid. The spike bore eighteen flowers, yellowish, with obscure rose-brown venation, the labellum with a crimson zone on the front lobe.

Award of Merit.

To *Odontoglossum* × 'Muralis,' Gerrish's var. ('Penelope' × 'Clovis') (votes unanimous), from R. Gerrish, Esq., Milford Manor, Salisbury. Flowers

rose-lilac, the basal half of each sepal and petal almost covered with a solid blotch of claret-purple; labellum with a crimson base and white apex.

To *Odontioda* × 'Metis' (*Oda.* × *Brewi* × *Odm.* × *eximium*) (votes unanimous), from R. Gerrish, Esq. A pretty hybrid with flowers of orange-red, shaded with a deeper tint.

To *Cattleya* × 'Rosery' (*Schroederæ* × 'Lord Rothschild') (votes unanimous), from R. Gerrish, Esq. A charming flower with the petals well developed. Pure white, except for an orange throat and a purple spot on the front lobe of the labellum.

To *Cymbidium* × *Pauwelsii*, Brockhurst var. (*insigne* × *Lowianum*) (votes 9 for, 1 against), from F. J. Hanbury, Esq., Brockhurst, East Grinstead. The spike bore twenty-seven well-developed flowers, fawn suffused with pink.

Brassocattleya × 'Springtide' var. 'Ethel N. Satow' (*C. Mossiæ* × *B.-c.* × 'Mad. Chas. Maron') (votes unanimous), from F. J. Hanbury, Esq. A beautiful bright rosy-mauve flower, the large labellum with an orange centre and the margin frilled.

Brassocattleya × *speciosa magnifica* (*B.-c.* × *Digbyano-Mendelii* × *C. Schroederæ*) (votes unanimous), from Messrs. H. G. Alexander, Ltd. A fine flower of large size, pale lilac-pink, deeper on the margin of the lip, which is fringed and has a yellow centre.

To *Odontioda* × 'Dovere' *majestica* (*Oda.* × 'Joan' × *Odm.* × *illustrissimum*) (votes unanimous), from Messrs. J. & A. McBean, Cooksbridge, Sussex. Sepals and petals broad and almost covered with bright reddish blotching, with a crimson overtint, the margin deep rose.

To *Odontoglossum* × *plumptonense* var. *lilacinum* (*amabile* × *Lambeauium*) (votes 12 for, 2 against), from Mr. John Evans, Colwyn Bay, N. Wales. The spike bore eight large flowers, in which the segments are almost covered with bright lilac-rose blotching.

Cultural Commendation.

To Mr. C. V. Kent, Orchid grower to E. R. Ashton, Esq., Camden Park, Tunbridge Wells, for *Sophranitis grandiflora*, a specimen with about twenty-five flowers.

Other Exhibits.

Robt. Paterson, Esq., Stamperland, Glasgow: *Cypripedium* × 'Robert Paterson.'

Messrs. A. J. Keeling & Sons, Westgate Hill, nr. Bradford: a collection of *Odontiodas*.

ORCHID COMMITTEE, APRIL 26, 1927.

Sir JEREMIAH COLMAN, Bt., in the Chair, and sixteen other members present.

Awards Recommended:—

Silver Banksian Medal.

To Messrs. Cowan, Southgate, for a group.

Banksian Medal.

To Messrs. Stuart Low, Jarvisbrook, Sussex, for a group.

To Messrs. Sutton Bros., Hassocks, Sussex, for a group.

First-class Certificate.

To *Odontioda* × 'Titian' (parentage unrecorded) (votes 15 for), from J. J. Bolton, Esq., Claygate, Surrey. Flowers rich ruby-red, the labellum brown-red with a yellow crest.

To *Odontioda* × 'Venus' var. 'Aphrodite' (*Odontioda* × 'Coronation' × *Odontoglossum* × 'Aglæon') (votes 10 for), from J. J. Bolton, Esq. This hybrid has heavy chocolate-red markings on a white ground, a rosy-mauve margin to the segments, and a reddish apex to the lip.

Award of Merit.

To *Odontoglossum* × 'Purple Empress' (parentage unknown) (votes 12 for, 2 against), from R. Gerrish, Esq., Milford Manor, Salisbury. Flowers large, the segments almost covered with purplish markings.

LXX PROCEEDINGS OF THE ROYAL HORTICULTURAL SOCIETY.

To *Odontoglossum* × 'Iphis,' Brockhurst var. ('Queen Alexandra' × *harvengtense*) (votes 11 for, 2 against), from F. J. Hanbury, Esq., Brockhurst, East Grinstead. Flowers rich yellow with heavy blotches of chocolate-brown, the lip with a yellow base.

To *Brassolaeliocattleya* × 'Ursula' (*L.-c.* × 'Sargon' × *B. Digbyana*) (votes 11 for), from Messrs. H. G. Alexander, Ltd., Westonbirt, Tetbury, Glos. Of purplish-rose colour, darker in the labellum, golden-yellow in the throat, and with the margin fringed.

Cultural Commendation.

To Mr. S. Lyne (Orchid-grower to J. J. Bolton, Esq.), for *Odontioda* × 'Orestes' var. 'Butterfly,' with an inflorescence of sixty-two flowers.

Other Exhibits.

J. J. Bolton, Esq.: *Odontioda* × 'Gladys' var. 'Perfection.'

Geo. Wm. Bird, Esq., The Manor House, West Wickham, Kent: *Odontioda* × 'Rufus' var. 'Wickham Beauty.'

Messrs. Charlesworth, Haywards Heath: *Vanda* × *Herziana*, and other hybrids.

Mr. Harry Dixon, Wandsworth Common: *Odontiodas*.

Mr. John Evans, Colwyn Bay: *Odontoglossum* × 'Norvic' and *Odontioda* × *Evansiae*.

ORCHID COMMITTEE, MAY 10, 1927.

Sir JEREMIAH COLMAN, Bt., in the Chair, and ten other members present.

Awards Recommended :—

Silver Banksian Medal.

To Messrs. Sanders, St. Albans, for species and hybrids.

Award of Merit.

To *Laeliocattleya* × 'Santa Claus' var. 'Lord Lambourne' (*L.-c.* × 'Soulangé' × *L.-c.* × 'St. Gothard') (votes unanimous), from Messrs. Stuart Low, Jarvisbrook, Sussex. A well-formed flower, sepals broader than usual, petals fully developed, rosy-mauve; labellum velvety-crimson, crisped at the margin.

To *Miltonia* × 'Kennie' var. 'Rosalind' (*vexillaria* var. 'G. D. Owen' × 'Venus') (votes 7 for, 1 against), from Messrs. Black & Flory, Slough. Flowers rose, the labellum marked with ruby-crimson lines and dots extending from the base almost to the outer margin.

Other Exhibits.

Messrs. Charlesworth: various species and hybrids.

The Exors. of the late Mr. H. T. Pitt: *Odontoglossum crispum* var. 'Harvest Moon.'

Lady Aberconway and the Hon. Henry McLaren, Bodnant, N. Wales: *Cypripedium* × 'Hiraethlyn' (*Godefroyae* × 'Blanchette'), porcelain-white with crimson spotting.

CHELSEA SHOW: ORCHID COMMITTEE, MAY 25, 1927.

Sir JEREMIAH COLMAN, Bt., in the Chair, and sixteen other members present.

[For cups and medals awarded by the Council, see p. xxvi.]

Awards Recommended :—

First-class Certificate.

To *Lycaste Skinneri* var. 'Mrs. Hamilton Smith' (votes unanimous), from Sir Jeremiah Colman, Bt., Gatton Park, Surrey. The finest form; flower much above the average size, and with the colour markings well displayed.

To *Odontioda* × 'Corregio' (*Odontioda* × 'Coronation' × *Odontoglossum* × *Vuylstekeae*) (votes 16 for), from J. J. Bolton, Esq., Claygate, Surrey. Light rose, segments blotched with reddish-rose, petals with a reddish-rose zone near the outer edge.

To *Miltonia* × 'Lucia' var. 'Stamperland' (*vexillaria* × 'Princess Margaret') (votes unanimous), from Robert Paterson, Esq., Cathcart, Glasgow. Sepals and petals rich crimson, labellum deep rose-purple, with darker veining.

To *Cattleya* × 'Prince Shimadzu' var. *superba* (*Hardyana* × 'Tityus') (votes 14 for), from Mrs. Robert Paterson, Cathcart, Glasgow. Flower rosy-mauve, tinged with pink, the petals with lighter reticulation, labellum crimson-purple.

Award of Merit.

To *Miltonia* × 'Conqueror' (parentage ?) (votes 13 for), from Messrs. Sanders, St. Albans. Flowers white, blush tinted, the labellum with a deep crimson blotch at its base.

To *Odontoglossum* × *eximium* var. *Colmanii* (*crispum* var. *solum* × *ardentissimum*) (votes unanimous), from Sir Jeremiah Colman, Bt. Flowers of medium size, with reddish-purple blotches on the sepals, and circular blotches of similar colour on the petals, labellum almost entirely dark crimson-purple.

To *Vuylstekeara* × 'Melba' var. *atropurpurea* (*V. × Brewii* × *Odontoglossum* × 'Gorizia') (votes 11 for, 5 against), from Messrs. Charlesworth & Co., Haywards Heath. Large flowers of uniform purplish-rose colour with a slight crimson over-tint, the lip with darker venation and the crest yellow.

To *Cymbidium* × 'Erica' var. 'Lord Lambourne' (*Pauwelsii* × *grandiflorum*) (votes 12 for), from Messrs. Stuart Low & Co. Flowers of clear canary-yellow, the lip with a median line of red and some reddish marks on the apex; column minutely spotted on the under side.

To *Miltonia* × *Sanderiana* var. 'Chelsea' ('St. Andre' × *Bleuana*) (votes unanimous), from Messrs. Black & Flory, Slough. Flowers of magenta-rose colour, with dark venation, specially on the sepals and petals, labellum with radiating red-brown lines at the base.

To *Miltonia* × 'Gloriosa' var. *superba* (*vexillaria* × 'Wm. Pitt') (votes unanimous), from Messrs. Cowan & Co., Southgate. An attractive flower with the segments almost covered with purplish suffusion, the labellum with a radiating mask surrounded by a broad whitish zone.

To *Miltonia* × 'Wm. Pitt' var. 'Brilliantissima' ('Isabel Sander' × *Bleuana*) (votes unanimous), from the Exors. of the late H. T. Pitt, Esq., Stamford Hill. Bright crimson-red, labellum with a distinct basal blotch.

To *Miltonia* × 'Kennie' var. *extraria* ('Venus' × *vexillaria*) (votes 14 for, 2 against), from Messrs. Sanders, St. Albans. Flowers rosy-mauve, the labellum having the greater part of its area covered with a blackish maroon blotch.

To *Odontoglossum* × 'Prince Imperial' (*promerens* × 'Diamond') (votes 11 for, 3 against), from Messrs. J. & A. McBean, Cooksbridge, Sussex. Of rose ground colour, heavily blotched with crimson, the roundly developed petals with an outer zone of similar colour.

To *Brassolaeliocattleya* × 'Ursula' var. *magnifica* (*L.-c.* × 'Sargon' × *B. Digbyana*) (votes 11 for), from Messrs. H. G. Alexander, Ltd., Westonbirt, Tetbury, Glos. Flowers of graceful habit, soft rose-pink, the lip purplish.

To *Cattleya* × 'Jupitus' ('Edith' × 'Tityus') (votes 10 for, 3 against), from Messrs. H. G. Alexander, Ltd. Flowers rosy-mauve, the labellum crimson-purple on the front lobe, the side lobes margined with similar colour.

Cultural Commendations.

To Mr. F. A. Bush, Orchid-grower to E. Sinclair, Esq., Manor Close, Chislehurst, Kent, for a superb specimen of *Vanda Parishii*, with eleven flower spikes and a total of eighty-six buds and flowers.

To Mr. S. Lyne, Orchid-grower to J. J. Bolton, Esq., for *Odontoglossum crispum* var. 'Drussila.'

To Mr. J. Collier, Orchid-grower to Sir Jeremiah Colman, Bt., for *Dendrobium* × 'Gatton Sunray' (*Dalhousieanum* × *illustre*), with four pendulous spikes, each with ten to twelve flowers.

To Mr. Ed. George, Orchid-grower to W. J. B. Van de Weyer, Esq., Cliffe, nr. Dorchester, for *Lissochilus Horsfallii*, with an erect spike 7 ft. 6 in. high. The species is figured in the *Botanical Magazine*, t. 5486.

ORCHID COMMITTEE, JUNE 8, 1927.

Sir JEREMIAH COLMAN, Bt., in the Chair, and ten other members present.

Awards Recommended :—

Silver-gilt Banksian Medal.

To Mr. John Evans, Colwyn Bay, N. Wales, for group of species and hybrids.

Silver Banksian Medal.

To Messrs. Charlesworth, Haywards Heath, for group.

To Messrs. Sanders, St. Albans, for group.

To Messrs. Stuart Low, Jarvisbrook, Sussex, for group.

First-class Certificate.

To *Miltonia* × 'Princess Mary,' Westonbirt var. (*Hyeana* × *Bleuana*), (votes 6 for, 2 against), from Messrs. H. G. Alexander, Ltd., Westonbirt, Tetbury, Glos. A large attractive flower, the sepals tinged with crimson, the petals heavily suffused with similar colour, the labellum has a reddish mask with radiating lines.

To *Burrageara* × 'Windsor' var. *purpurea* (*Oncidioda Cooksoniae* × *Odon-tonia Firminii*) (votes 8 for, 2 against), from Messrs. Black & Flory, Slough. The flowers, borne on a spike about 4 ft. long, are suffused with lilac-purple, the labellum solid purple, except for some yellow on the crest area.

To *Odontoglossum* × 'Ascania,' Stamperland var. ('Antinous' × 'Georgius Rex' (votes 8 for), from Robert Paterson, Esq., Cathcart, Glasgow. The spike bore six flowers, golden-yellow with red-brown blotching.

ORCHID COMMITTEE, JUNE 21, 1927.

Sir JEREMIAH COLMAN, Bt., in the Chair, and eleven other members present.

Awards Recommended :—

Silver Banksian Medal.

To Messrs. Charlesworth, Haywards Heath, for group.

To Messrs. Cowan, Southgate, for group.

To Messrs. Sanders, St. Albans, for group.

To Messrs. Stuart Low, Jarvisbrook, Sussex, for group.

Award of Merit.

To *Miltonia* × 'Lycaena' var. 'Franconia' ('Princess Margaret' × 'Lord Lambourne') (votes unanimous), from Frank Mercer, Esq., 'Clovelly,' Steyning. Flowers large, the petals unusually broad, almost covered with crimson suffusion, labellum with a reddish-brown blotch at the base, the central area marked with crimson.

Cultural Commendation.

To Messrs. J. & A. McBean, Cooksbridge, Sussex, for *Anguloa Rucheri* (votes 8 for), with eleven flowers.

Other Exhibits.

Messrs. J. & A. McBean, Cooksbridge: *Odontioda* × 'Thela' (*Bradshawiae* × 'Orestes').

Messrs. H. G. Alexander: *Miltonia* × *Hyeana* var. 'Garnet.'

The Exors. of the late Mr. H. T. Pitt: *Miltonia* × 'Wm. Pitt' var. 'Dusky Monarch,' richly coloured.

Robert Paterson, Esq., Cathcart, Glasgow: *Miltonia* × 'Princess Mary,' Stonehurst var.

NARCISSUS AND TULIP COMMITTEE.

FEBRUARY 8, 1927.

Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and nine other members present.

Awards Recommended :—*Banksian Medal.*

To Messrs. R. H. Bath, Wisbech, for a group of Daffodils and Tulips, having regard for the early date.

Award of Merit.

To *Narcissus* 'March White,' as a market variety for forcing (votes 8 for, 0 against). Division I. (c). A bi-color Trumpet variety with a sulphur-yellow trumpet. Raised by Rev. G. P. Haydon and shown by Messrs. R. H. Bath.

NARCISSUS AND TULIP COMMITTEE, FEBRUARY 22, 1927.

Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and eleven other members present.

Awards Recommended :—*Silver-gilt Banksian Medal.*

To Messrs. R. H. Bath, Wisbech, for Daffodils and Tulips.

To Messrs. James Carter, Raynes Park, for Tulips.

Vote of Thanks.

To Mr. F. A. Secrett, Twickenham, for Daffodils.

To Mr. W. Van de Weyer, for *Narcissus triandrus concolor* and two hybrids of *N. triandrus*.

NARCISSUS AND TULIP COMMITTEE, MARCH 8, 1927.

Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and fifteen other members present.

Awards Recommended :—*Silver Banksian Medal.*

To Messrs. J. R. Pearson, Lowdham, for Daffodils.

Banksian Medal.

To Messrs. R. H. Bath, Wisbech, for Daffodils and Tulips.

Vote of Thanks.

To Mr. J. W. Barr, Wimborne, for Daffodils.

To Mr. G. W. Miller, Wisbech, for Daffodils and Tulips.

Mixed Groups.

It was decided that in future when an exhibit including Daffodils and/or Tulips contains a large proportion of other flowers the exhibitor shall decide whether the group shall be judged by the Narcissus and Tulip Committee or by the Floral Committee. In the event of the exhibitor electing to have his group judged by the Narcissus and Tulip Committee, the Committee shall base any recommendation for an award upon the merits of the Daffodils and Tulips only.

LXXIV PROCEEDINGS OF THE ROYAL HORTICULTURAL SOCIETY.

NARCISSUS AND TULIP COMMITTEE, MARCH 22, 1927.

Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and sixteen other members present.

Awards Recommended :—

Silver-gilt Banksian Medal.

To Messrs. Barr, Covent Garden, for Daffodils.

Silver Banksian Medal.

To Messrs. R. H. Bath, Wisbech, for Tulips and Daffodils.

To Messrs. J. R. Pearson, Lowdham, for Daffodils.

To Mr. J. L. Richardson, Waterford, for Daffodils.

Award of Merit.

To *Narcissus* 'Godolphin,' for show purposes (votes 11 for, 0 against). Raised and shown by Mr. P. D. Williams, St. Keverne. This variety received an Award of Merit for garden decoration, and also as a market variety for cutting from the open, on March 24, 1925.

To *Narcissus* 'Havelock,' for show purposes (votes 16 for, 0 against). Division II. (a). A well-formed *incomparabilis* variety, with broad clear yellow perianth segments and a cup of a slightly deeper yellow. Raised and shown by Mr. P. D. Williams.

To *Narcissus* 'Lanarth,' for show purposes (votes 10 for, 0 against). Division VII. A shapely, medium-sized, deep yellow Jonquil hybrid. Raised and shown by Mr. P. D. Williams.

To *Narcissus* 'Penalewey,' for show purposes (votes 11 for, 0 against). Division IV. (a). A charming *Leedsii* variety, with a white perianth and a cream-coloured cup edged with gold. Raised and shown by Mr. P. D. Williams.

To *Narcissus* 'Tregoose,' for show purposes (votes 14 for, 0 against). Division II. (a). A fine large flowered *incomparabilis* variety, with a soft yellow perianth and a frilled orange-coloured cup. Raised and shown by Mr. P. D. Williams.

Vote of Thanks.

To Messrs. J. Carter & Co., Raynes Park, for Tulips.

To Mr. G. W. Miller, Wisbech, for Tulips and Daffodils.

To Mr. J. W. Barr, Wimborne, for Daffodils.

To Messrs. Cartwright & Goodwin, Kidderminster, for Daffodils.

Selected for Trial at Wisley.

Narcissus 'Trevithian,' which was shown by Mr. P. D. Williams as a variety for garden decoration, was recommended for trial at Wisley.

Hybrid to be shown before Scientific Committee.

It was decided that a hybrid between *Narcissus juncifolius* and *N. obvallaris*, shown by Mr. J. S. Arkwright, should be brought to the notice of the Scientific Committee.

NARCISSUS AND TULIP COMMITTEE, APRIL 5, 1927.

Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and fourteen other members present.

Awards Recommended :—

Gold Medal.

To the Donard Nursery Company, Newcastle, Co. Down, for Daffodils.

Silver-gilt Banksian Medal.

To Messrs. Barr, Covent Garden, for Daffodils.

Silver Banksian Medal.

To Messrs. R. H. Bath, Wisbech, for Daffodils.

To Messrs. J. R. Pearson, Lowdham, for Daffodils.

Banksian Medal.

To Mr. J. W. Barr, Wimborne, for Daffodils.
 To Messrs. James Carter & Co., Raynes Park, for Tulips.
 To Messrs. H. Chapman, Rye, for Daffodils.
 To Messrs. Sutton & Sons, Reading, for Daffodils.

Award of Merit.

To *Narcissus* 'Suda,' for show purposes (voting unanimous), Division IV. (a). A giant *Leedsii*, with a white perianth and a rather wide-mouthed sulphur-yellow trumpet. Raised by the Brodie of Brodie, and shown by Messrs. H. Chapman, Ltd.

To *Narcissus* 'Eskimo,' for show purposes (votes 11 for, 2 against), Division I. (b). A medium-sized, well-formed flower with a white perianth and cream-coloured trumpet which is tinged with yellow at the mouth. Raised by the Brodie of Brodie and shown by the Donard Nursery Co.

Mr. Chapman's Hybrids.

Mr. Chapman exhibited a supposed hybrid between *N. triandrus* and a Jonquil; a hybrid which he had raised between *N. calathinus* and *N. Bulbocodium citrinus*; and a hybrid between *N. calathinus* and *N. 'Katherine Spurrell.'* It was recommended that these plants should be submitted to the Scientific Committee.

NARCISSUS AND TULIP COMMITTEE, APRIL 12, 1927.

Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and twenty-two other members present.

The Peter Barr Memorial Cup.

The Secretary reported that he had received only one nomination for the Peter Barr Memorial Cup, viz. Mr. J. T. White of Spalding. The Committee was unanimous in recommending that the Cup be awarded to Mr. White.

Mr. A. W. White thanked the Committee on behalf of his father, who, he knew, would greatly appreciate the honour.

Awards Recommended :—*Gold Medal.*

To Messrs. Barr & Sons, Covent Garden, for Daffodils.
 To Messrs. R. H. Bath, Ltd., Wisbech, for Daffodils.
 To Mr. J. L. Richardson, Waterford, for Daffodils.

Silver-gilt Banksian Medal.

To the Donard Nursery Co., Newcastle, Co. Down, for Daffodils.
 To Messrs. J. R. Pearson & Sons, Lowdham, for Daffodils.
 To Mr. Guy L. Wilson, Dublin, for Daffodils.

Silver Banksian Medal.

To Mr. J. W. Barr, Wimborne, for Daffodils.
 To Messrs. D. Stewart, Wimborne, for Daffodils.

Banksian Medal.

To Messrs. Cartwright & Goodwin, Kidderminster, for Daffodils.
 To the Welsh Bulb Fields, St. Asaph, for Daffodils.
 To Mr. W. F. M. Copeland, for Daffodils.

First-class Certificate.

To *Narcissus* 'Mitylene,' for show purposes (votes 13 for, 1 against). Shown by Mr. J. L. Richardson, Waterford. This variety received an Award of Merit for show purposes on March 23, 1926.

Award of Merit.

To *Narcissus* 'Holland's Glory,' for show purposes (votes 16 for, 0 against). Division X. A symmetrical fully double flower of a pleasing soft yellow shade. Said to have occurred as a sport from 'Emperor' in the nurseries of the exhibitors, Messrs. L. van Leeuwen, Sassenheim.

LXXVI PROCEEDINGS OF THE ROYAL HORTICULTURAL SOCIETY.

To *Narcissus* 'Scarlet Perfection,' for show purposes (votes 16 for, 1 against). Division II. (a). An *incomparabilis* variety, with a primrose-yellow perianth and rich orange saucer-shaped cup. This variety, which received a Certificate of Preliminary Recognition as a show flower on April 10, 1923, is wrongly entered in the 1927 edition of the Classified List of Daffodil Names as belonging to Division III. (a). Raised by Mrs. R. O. Backhouse and shown by Messrs. R. H. Bath, Wisbech.

To *Narcissus* 'Therapia,' for show purposes (votes 12 for, 2 against). Division III. (b). A bicolor *Barrii* variety, with a smooth white perianth and a fairly broad yellow cup which has a very wide red margin. Raised by the Brodie of Brodie and shown by Mr. J. L. Richardson, Waterford.

To *Narcissus* 'Turin,' for show purposes (votes 16 for, 0 against). A bicolor *Barrii* variety. The perianth is white and of good substance, while the orange-coloured corona has a yellow centre. Raised and shown by Mr. P. D. Williams, St. Keverne. This variety was wrongly registered as belonging to Division IX., and is consequently wrongly entered in the 1927 edition of the Classified List of Daffodil Names.

To *Narcissus* 'Mephisto,' for show purposes (voting unanimous). Division III. (a). A well-formed *Barrii* variety. The perianth is yellow and of good substance. The cup is of a brilliant reddish-orange, developing a yellow centre as the flower ages. Raised and shown by Mr. P. D. Williams.

To *Narcissus* 'Egwin,' for show purposes (votes 13 for, 0 against). Division III. (b). A *Barrii* variety, with a very large almost self-yellow flower, but the cup is of a slightly deeper shade. Raised and shown by Mr. P. D. Williams.

Preliminary Recognition.

To *Narcissus* 'Manora,' for show purposes (votes 9 for, 3 against). Division I. (b). A large, well-formed flower with a white perianth and a trumpet of very pale yellow. Raised and shown by Mr. A. J. Bliss, Tavistock.

To *Narcissus* 'Red Sea,' for show purposes (voting unanimous). Division III. (b). A *Barrii* variety, with a cream-coloured perianth and a rather wide reddish-orange cup. Raised by the Brodie of Brodie and shown by Mr. J. L. Richardson, Waterford.

Selected for Trial at Wisley.

Recommended for trial as market varieties for cutting from the open.

Narcissus 'Kingsley Fairbridge,' Division I. (c). Raised by Rev. G. H. Engleheart and shown by Mr. F. A. Secrett, Twickenham.

Narcissus 'Pride of the Market,' Division II. (a). Shown by Messrs. R. H. Bath, Wisbech.

Narcissus 'Pennycome Quick,' Division III. (b). Shown by Mr. P. D. Williams, St. Keverne.

Recommended for trial as varieties for garden decoration.

Narcissus 'Duddingston,' Division I. (a). Raised and shown by Messrs. Dobbie & Co., Edinburgh.

Narcissus 'Pride of the Market.'

NARCISSUS AND TULIP COMMITTEE, APRIL 26, 1927.

Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and fourteen other members present.

Awards Recommended :—

Silver-gilt Banksian Medal.

To Messrs. Barr, Covent Garden, for Daffodils.
To Mr. F. A. Secrett, Twickenham, for Daffodils.

Banksian Medal.

To Mr. J. W. Barr, Wimborne, for Daffodils.

Vote of Thanks.

To Messrs. D. Stewart, Wimborne, for Daffodils.
To Messrs. W. B. Cranfield, Enfield Chase, for Daffodils.

Award of Merit.

To *Narcissus* 'Venetia,' as a variety for cutting (voting unanimous). Division V. (b). Raised by Mr. H. Backhouse and shown by Mr. W. B. Cranfield, Enfield Chase. This variety received an Award of Merit on April 29, 1923.

To *Narcissus* 'Mayflower,' as a show flower (votes 6 for, 0 against). Division III. (a). A *Barri* variety with broad milk-white perianth segments of good substance and on orange-red cup. Raiser unknown. Shown by Mr. F. A. Secrett, Twickenham.

Preliminary Recognition.

To *Narcissus* 'Engleheart's White Rose,' as a show flower (voting unanimous). Division X. A sweetly scented double-white Poeticus variety of good quality. Raised by Rev. G. H. Engleheart and shown by Mr. F. A. Secrett, Twickenham.

Selected for Trial at Wisley.*Recommended as market varieties for cutting from the open.*

Narcissus 'Snow-sprite,' Division X. Shown by Messrs. Barr & Sons, Covent Garden.

Narcissus 'Mayflower,' Division III. (a). Shown by Mr. F. A. Secrett, Twickenham.

Narcissus 'Papyrus,' Division IX. Shown by Mr. F. A. Secrett.

Narcissus 'Nanette,' Division X. Shown by Mr. H. G. Longford, Abingdon.

NARCISSUS AND TULIP COMMITTEE, MAY 10, 1927.

Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and fifteen other members present.

Standard Collection of Daffodils.

The Committee selected the following varieties which, in its opinion, should be planted at Wisley as standard varieties to be used for comparison in the trials:

<i>Varities for Garden Decoration.</i>	<i>Market Varieties for cutting from the open.</i>	<i>Varities for the Rock-garden.</i>
<i>Division I. (a).</i>		
'Cleopatra'	'King Alfred'	<i>nanus</i>
'King Alfred'	'Emperor'	<i>minor</i>
'Potentate'	'Golden Spur'	<i>minimus</i>
<i>Division I. (b).</i>		
'Madame de Graaff'	'Madame de Graaff'	'W. P. Milner'
'Mrs. Robert Sydenham'	'Mimi'	<i>moschatus</i>
'White Knight'	'Sulphur Beauty'	
<i>Division I. (c).</i>		
'Empress'	'Empress'	
'Weardale Perfection'	'Weardale Perfection'	
'Duke of Bedford'	'Spring Glory'	
<i>Division II. (a).</i>		
'Croesus'	'Croesus'	
'Homespun'	'Sir Watkin'	
'Sir Watkin'	'Autocrat'	
<i>Division II. (b).</i>		
'Whitewell'	'Bernardino'	
'Bernardino'	'Lady Margaret Boscawen'	
'Lady Margaret Boscawen'	'Lucifer'	

lxxviii PROCEEDINGS OF THE ROYAL HORTICULTURAL SOCIETY.

*Varieties for
Garden Decoration.*

*Market Varieties
for cutting from the open.*

*Varieties for
the Rock-garden.*

Division III. (a).

Barrii conspicuus
'Bath's Flame'

Barrii conspicuus
'Bath's Flame'
'Brilliancy'

Division III. (b).

'Seagull'
'Sunrise'
'Albatross'

'Lady Godiva'
'Sunrise'
'Firetail'

Division IV. (a).

'Lord Kitchener'
'Crystal Queen'
'Hon. Mrs. J. L. Franklin'

'Lord Kitchener'

Division IV. (b).

'Queen of the North'
'White Lady'
'Evangeline'

'Queen of the North'
'White Lady'
'Evangeline'

Division V. (a).

'Marie Hall'

'Queen of Spain'
'Beryl'

Division V. (b).

'Venetia'

'Venetia'

'Dawn'

Division VI.

'February Gold'

Division VII.

'Buttercup'
odorus rugulosus
odorus rugulosus maximus

'Buttercup'
odorus rugulosus

Division VIII.

'Admiration'
'Elvira'
'Aspasia'
'Medusa'
'Chinita'

'Elvira'
'Aspasia'

Division IX.

poeticus ornatus maximus
'Horace'
'Sonata'

poeticus ornatus maximus
'Horace'
'Virgil'

Division X.

'Argent'
'Inglescombe'
'Primrose Phoenix'

'Argent'
'Inglescombe'
'Primrose Phoenix'

Division XI.

Bulbocodium conspicuus
cyclaminus
triandrus albus
juncifolius

Awards Recommended :—*Gold Medal.*

To Messrs. Barr, Covent Garden, for Tulips.
To Messrs. Dobbie, Edinburgh, for Tulips.

Silver-gilt Banksian Medal.

To Messrs. R. H. Bath, Wisbech, for Tulips.
To the Bronwylfa Fruit Farm, St. Asaph, for Tulips.
To Messrs. J. R. Pearson, Lowdham, for Tulips.
To Mr. H. G. Longford, Abingdon, for Tulips.

Silver Banksian Medal.

To Messrs. J. J. Grullemans, Lisse, for Tulips.
To Rev. R. Meyer, Watton Rectory, Hertford, for Tulips.
To The Welsh Bulb Fields, St. Asaph, for Tulips.

Banksian Medal.

To Messrs. D. Stewart & Sons, Wimborne, for Tulips.

Vote of Thanks.

To Mr. G. W. Miller, Wisbech, for Tulips.

Award of Merit.

To Tulip 'Mars' (votes 11 for, 0 against). An English florist's variety of good substance, with deep orange-scarlet perianth segments and a yellow base. Raised and shown by Sir Daniel Hall, The Manor House, Merton.

To Tulip 'Bronzewing' (votes 10 for, 0 against). A Cottage Tulip of a reddish-bronze, shaded to golden-bronze at the edges of the perianth segments, and having a bluish base. Raised and shown by Sir Daniel Hall.

NARCISSUS AND TULIP COMMITTEE, MAY 24, 1927.

Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and ten other members present.

The only plant exhibited before the Committee was a Tulip, and no award was recommended.

THE ROYAL HORTICULTURAL SOCIETY

Vincent Square, Westminster, London, S.W. 1

Election and Privileges of Fellows and Associates and Terms of Subscription.

- 1.—Anyone interested in Horticulture is eligible for election and is invited to join the Society.
- 2.—Candidates for election are proposed by two Fellows of the Society.
- 3.—The Society, being incorporated by Royal Charter, the Fellows incur no personal liability whatsoever, beyond the payment of their Annual Subscriptions.

FELLOWS.

A Fellow subscribing FOUR Guineas a year (or commuting for Forty Guineas) is entitled—

- 1.—To ONE Non-transferable (personal) Pass and FIVE Transferable Tickets admitting to all the Society's Meetings, and to the Gardens.
- 2.—To attend the Lectures and vote at all Meetings of the Society.
- 3.—To the use of the Library at the Society's Hall.
- 4.—Admission to the Society's Gardens at Wisley.
- 5.—To a copy of the Society's *Journal*, containing the Papers read at all Meetings and Conferences, Reports of Trials made at the Gardens, and descriptions and illustrations of new or rare plants, &c.
- 6.—To purchase, at reduced rates, such fruit and vegetables as are not required for the experimental purposes of the Society.
- 7.—To a share (in proportion to the annual subscription) of such surplus or waste plants* as may be available for distribution. Fellows residing beyond a radius of 35 miles from London (by the A.B.C. Railway Guide) are entitled to a double share.
- 8.—Subject to certain fees and limitations, to obtain Analyses of Manures, Soils, &c., or advice on such subjects, by letter from the Society's Laboratory at Wisley.
- 9.—To have their gardens inspected by the Society's Officer at the following fees:—
One day, £3 3s.; two days, £5 5s.; plus all out-of-pocket expenses.
- 10.—To exhibit at all Meetings and to send seeds, plants, &c., for trial to the Society's Gardens.
- 11.—To recommend any Lady or Gentleman for election as a Fellow.

A Fellow subscribing TWO Guineas a year (or commuting for Twenty-five Guineas) is entitled—

- 1.—To ONE Non-transferable Pass and Two Transferable Tickets.
- 2.—To all the other privileges mentioned in Nos. 2 to 11, above.

A Fellow subscribing ONE Guinea a year with One Guinea Entrance Fee *[no Entrance Fee in the case of Working Gardeners earning their livelihood thereby or Fellows permanently resident abroad]* **(or commuting for Fifteen Guineas) is entitled—**

- 1.—To ONE Transferable Ticket (in lieu of the Non-transferable personal Pass), and all the other privileges mentioned in Nos. 2 to 11, above.

ASSOCIATES.

An Associate subscribing 10s. 6d. a year is entitled—

- 1.—To ONE Non-transferable Pass, and to privileges mentioned in Nos. 3, 4, 5 and 10 above. Associates must be persons earning their livelihood by working as bona fide Gardeners, or employees in a Public or Botanical Garden, Nursery, Private or Market Garden, or Seed Establishment, or Journalists writing for country or foreign papers, and must be recommended for election by Two Fellows of the Society.

ADMISSION TO THE GARDENS AT WISLEY.

The Gardens are open to Fellows on Week-days, except Good Friday and Christmas Day, from 9 a.m. till dusk; and on Sundays commencing from the first Sunday in April to the first Sunday in October inclusive from 2 p.m. till 6 p.m.

Each Transferable Ticket or Non-Transferable Personal Pass will admit three persons to the Gardens.

SUBSCRIPTIONS.

Fellows or Associates are not entitled to any privilege until their subscriptions have been paid, the payment of which will be considered as distinctly implying acquiescence in all the Rules, Regulations, and By-laws of the Society.

The annual subscription is payable in advance on the 1st day of January in each year. A Fellow, if elected before the 1st of July, shall pay the annual subscription for the current year; if elected on or after the 1st of July and before 1st of October he shall pay half-a-year's subscription; if elected after the 1st of October and before the 1st of January he shall pay at the time of election the full amount of the subscription for the year commencing from the 1st day of January then next and no further subscription until the next succeeding 1st of January.

* **SURPLUS PLANTS.** Note.—These are Plants which are surplus to the requirements of the Wisley Gardens, and as the Garden becomes fully planted, the number available may be diminished.

EXTRACTS FROM THE PROCEEDINGS

OF THE

ROYAL HORTICULTURAL SOCIETY.

GENERAL MEETING.

JULY 5, 1927.

Sir WILLIAM LAWRENCE, Bt., in the Chair.

One hundred and twenty-five Fellows were elected, and three Societies affiliated.

The Clay Challenge Cup for a new Rose possessing the true old Rose scent was awarded to Mr. Frederick Evans of Reading, for Rose 'Abol.'

GENERAL MEETING.

JULY 19, 1927.

Mr. P. C. M. VEITCH, V.M.H., in the Chair.

Eighty-four Fellows were elected, and three Societies affiliated.

A lecture was given by Mr. J. G. Millais on "Magnolias" (see p. 318).

R.H.S. FRUIT COMPETITION FOR AMATEURS

JULY 19, 1927.

Chief Awards.

Class 1.—Collection of Cherries.

First Prize, Silver Bunyard Medal and £4.

To Sir Charles Nall-Cain, Bt. (gr. Mr. T. Pateman), Hatfield.

Class 5.—Collection of Gooseberries.

First Prize, Silver Bunyard Medal and £4.

To F. C. Stoop, Esq. (gr. Mr. G. Carpenter), West Hall, Byfleet.

Class 20.—Collection of twelve dishes of fruit.

First Prize, Silver Hogg Medal and £6.

To Sir Charles Nall-Cain, Bt. (gr. Mr. T. Pateman), Hatfield.

GENERAL MEETING.

AUGUST 3, 1927.

The Rt. Hon. The Lord LAMBOURNE, P.C., G.C.V.O., V.M.H., in the Chair.

Fifty-nine Fellows and one Associate were elected, and one Society affiliated.

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FRUIT COMPETITION FOR AMATEURS.

AUGUST 3, 1927.

Chief Awards.

Class 15.—Collection of six dishes of Apples.

First Prize, Silver Bunyard Medal and £4.

To J. A. Stidston, Esq., Bishopsteignton, Devon.

Class 23.—Collection of twelve dishes of fruit.

First Prize, Silver Hogg Medal and £6.

To Sir Charles Nall-Cain, Bt. (gr. Mr. T. Pateman), Hatfield.

GENERAL MEETING.

AUGUST 16, 1927.

The Rt. Hon. The Lord LAMBOURNE, P.C., G.C.V.O., V.M.H., in the Chair.

Fifty-two Fellows were elected, and two Societies affiliated.

The Foremarke Cup, for twenty spikes of named Gladioli in not less than ten varieties, was awarded to Mr. A. E. Amos, of Colchester.

GENERAL MEETING.

AUGUST 30, 1927.

The Rt. Hon. The Lord LAMBOURNE, P.C., G.C.V.O., V.M.H., in the Chair.

Forty-one Fellows were elected, and two Societies affiliated.

GENERAL MEETING.

SEPTEMBER 13, 1927.

Mr. A. D. COTTON, F.L.S., in the Chair.

Thirty-six Fellows were elected.

A lecture was given by Mr. W. J. Dowson, M.A., F.L.S., on "Some Diseases of Bulbs due to Fungi" (see p. 45).

AMATEUR VEGETABLE SHOW.

SEPTEMBER 13, 1927.

LIST OF JUDGES.

BARKER, S.
BULLOCK, A.
CUTHBERTSON, W., V.M.H.
DIVERS, W. H., V.M.H.
HARRISON, J.
METCALFE, A. W.

NEAL, E.
NIX, C. G. A., V.M.H.
PRINCE, H. A.
PRITCHARD, W.
WILKIN, H. T.

Chief Awards.

R.H.S. Challenge Cup, for the highest number of points gained at the Show.

To Lord Riddell, Walton Heath Golf Club, who obtained 14 points.

Class 1.—Collection of vegetables.

First Prize, The Sutton Cup and £10.

To Viscount Hambleden (gr. Mr. W. Turnham), Henley-on-Thames.

Class 2.—Collection of vegetables.

First Prize, Silver-gilt Knightian Medal and £5.

To Lord Riddell (gr. Mr. A. Payne), Walton Heath Golf Club.

AUTUMN SHOW AT HOLLAND PARK HALL.

SEPTEMBER 28-30, 1927.

JUDGES.

BARKS, J. W.	HART, J. N.
BARNES, N. F., V.M.H.	LADDS, F.
BEAN, W. J., I.S.O., V.M.H.	LAMPLOUGH, Dr. C.
BECKETT, E., V.M.H.	MAY, H. B., V.M.H.
BILNEY, W. A., J.P., V.M.H.	MCLEOD, J. F.
BOWLES, E. A., M.A., V.M.H.	PAGE, COURTNEY
BOYD, W.	PATEMAN, T.
CAMPBELL, D.	PETTIGREW, W. W., V.M.H.
CHURCHER, Major G.	PRESTON, F. G.
COBB, A. J.	SHILL, J. E.
COLMAN, Sir JEREMIAH, Bt., V.M.H.	STANLEY, Lady BEATRIX
COMBER, J.	STERN, F. C.
COUTTS, J.	STEVENSON, T.
CUNNINGHAM, H.	TAYLOR, W.
DYE, A.	WALLACE, W. E., V.M.H.
FINDLAY, R.	WESTON, J. G.
GIBBS, Hon. VICARY, V.M.H.	

*Awards.**The Coronation Cup*, for the most meritorious group.

To Messrs. Blackmore & Langdon, Bath, for Begonias.

The Wigan Cup, for the best exhibit of Roses.

To Messrs. S. McGredy & Son, Portadown.

Gold Medal.

To Messrs. C. Engelmann, Saffron Walden, for Carnations.

To Messrs. Blackmore & Langdon, for Begonias.

To Messrs. Dobbie, Edinburgh, for Dahlias.

To Messrs. Bunyard, Maidstone, for fruit.

To Messrs. S. McGredy, for Roses.

Silver Cup.

To Messrs. Allwood, Wivelsfield, for Carnations.

To Messrs. John Peed, for greenhouse plants.

To Messrs. Dickson & Robinson, for Dahlias.

To Mr. J. B. Riding, for Dahlias.

To Messrs. W. Treseder, for Dahlias.

To Mr. J. C. Allgrove, for fruit.

To the Barnham Nurseries, Ltd., for fruit.

To Messrs. J. Cheal, for shrubs.

To Messrs. Hillier, for trees and shrubs.

To Mr. George Prince, for trees and shrubs.

To Mr. T. Robinson, for Roses.

To Mr. George Prince, for Roses.

Silver-gilt Flora Medal.

To Messrs. Austin & McAslan, Glasgow, for Gladioli.

To Messrs. Stuart Low, Jarvis Brook, for Orchids.

To Messrs. Stuart Low, Jarvis Brook, for Carnations.

To Messrs. James Carter, Raynes Park, for greenhouse flowering plants.

To Messrs. Sutton, Reading, for Begonias.

To Messrs. Jarman, Yeovil, for Dahlias.

To Messrs. H. J. Jones, Lewisham, for Dahlias.

To Mr. G. Reuthe, Keston, for trees and shrubs.

To Messrs. Chaplin, Waltham Cross, for Roses.

To Messrs. Alex. Dickson, Newtownards, for Roses.

To Messrs. Jackman, for mixed group of Clematis and herbaceous plants.

To Messrs. Russell, Richmond, for mixed group of Clematis, hardy climbers, and miscellaneous plants.

To Messrs. Wallace, Tunbridge Wells, for mixed group of shrubs and bulbous and herbaceous plants.

LXXXIV PROCEEDINGS OF THE ROYAL HORTICULTURAL SOCIETY.

Silver-gilt Banksian Medal.

- To Mr. S. Smith, for Cacti, succulents and miniature gardens.
- To Messrs. Carter Page, for Dahlias.
- To Mr. J. Stredwick, St. Leonards-on-Sea, for Dahlias.
- To Mr. J. T. West, for Dahlias.
- To Mr. H. Woolman, for Dahlias.
- To Mr. A. Charlton, for trees and shrubs.
- To Messrs. Maxwell & Beale, Broadstone, for Heather garden.
- To Mr. R. C. Notcutt, Woodbridge, for shrubs.
- To Messrs. J. Waterer, Sons & Crisp, Bagshot, for shrubs and conifers.
- To Messrs. B. R. Cant, Colchester, for Roses.
- To Messrs. Elisha J. Hicks, Twyford, for Roses.
- To Messrs. J. H. Pemberton, Havering, for Roses.
- To Messrs. D. Prior & Sons, Colchester, for Roses.
- To Messrs. J. Waterer, Sons & Crisp, Bagshot, for Roses.
- To Mr. W. Wells, Jun., Merstham, for Michaelmas Daisies and other herbaceous plants.
- To the King's Acre Nurseries, Hereford, for Dahlias and Chrysanthemums.
- To Mr. Amos Perry, Enfield, for herbaceous plants.
- To Messrs. Bakers, Codsall, for herbaceous plants.
- To Mr. M. Pritchard, Christchurch, for herbaceous plants.

Silver Flora Medal.

- To Mr. Ernest Ballard, for Michaelmas Daisies.
- To Mr. J. W. Forsyth, for Chrysanthemums.
- To Messrs. Luxford, for Chrysanthemums.
- To Mr. W. Yandell, for Chrysanthemums and Violas.
- To Messrs. Winder, for Dahlias.
- To Messrs. J. Cheal & Sons, Ltd., for Dahlias.
- To Messrs. Robt. Green, for Bay trees.
- To Mr. J. Klinkert, for topiary work.
- To Messrs. W. Easlea, for Roses.
- To Mr. John Mattock, Leigh, for Roses.
- To Messrs. A. Warner, for Roses.
- To Messrs. Cutbush, for mixed group of Dahlias and Pentstemons.
- To Messrs. Isaac House & Son, for mixed group of Scabious, Kniphofias, and herbaceous plants.
- To Messrs. Harkness & Sons, for herbaceous plants.
- To Messrs. B. Ladhams, Ltd., for Lobelias and other herbaceous plants.
- To Messrs. J. Waterer, Sons & Crisp, Ltd., for herbaceous plants.
- To Mr. W. E. Th. Ingwerson, for rock-garden plants and dwarf conifers and shrubs.
- To Mr. James MacDonald, for 'Lawn Garden.'

Silver Banksian Medal.

- To Messrs. R. H. Bath, for Gladioli.
- To Messrs. R. & G. Cuthbert, for Streptocarpus and Crassulæ.
- To Messrs. Stuart Low, for greenhouse plants.
- To Mr. Charles Turner, for Dahlias.
- To Messrs. Fletcher Bros., for shrubs and conifers.
- To the Hollamby's Nurseries, for trees and shrubs.
- To Messrs. D. Stewart & Son, for shrubs.
- To Messrs. Frank Cant for Roses.
- To Mr. Amos Perry, Enfield, for aquatic plants.
- To the Orpington Nurseries Co., for mixed group of Gladioli and Michaelmas Daisies.
- To Mr. H. J. Jones, Lewisham, for Michaelmas Daisies and Helianthus.
- To Mr. Clarence Elliott, Stevenage, for rock garden.

Flora Medal.

- To Mr. T. Bones, Cheshunt, for Michaelmas Daisies.
- To Mr. W. Sydenham, for Michaelmas Daisies.
- To Mr. H. Clarke, for Dahlias.
- To Mr. H. Hemsley, for trees and shrubs.
- To Dowty's Rosery, for Roses.
- To Messrs. Wood & Ingram, Huntingdon, for Roses.
- To the Chalk Hill Nurseries, for herbaceous plants.

To Messrs. W. H. Rogers & Son, Southampton, for mixed group of alpine plants, dwarf shrubs, and herbaceous plants.

To Messrs. E. F. Fairbairn & Sons, for Phloxes.

Banksian Medal.

To the Orpington Nursery Co., for dwarf conifers and shrubs.

To the Backhouse Nurseries (York) Ltd., for mixed group of dwarf shrubs and alpine plants.

To Mr. F. G. Wood, for rock garden.

To Mr. W. F. Gullick, for herbaceous and bulbous plants.

To Messrs. Hewitt & Co., for mixed group of Delphiniums, Dahlias and herbaceous plants.

To Messrs. Wilson & Agar, for mixed group of Dahlias, Gladioli, Chrysanthemums, and herbaceous plants.

To Messrs. Wm. Wood & Son, for mixed group of Michaelmas Daisies and herbaceous plants.

To Mr. F. Rich, for mixed group of Michaelmas Daisies and other herbaceous plants.

To Mr. H. Woolman, for mixed group of Chrysanthemums and Dahlias.

To Messrs. Howell & Skarratt, for mixed group of herbaceous plants, alpine plants, and dwarf shrubs.

To Messrs. G. Gibson, for herbaceous plants.

To Mr. Gavin Jones, for herbaceous plants.

Silver Hogg Medal.

To A. P. Brandt, Esq. (gr. J. W. Barks), for Grapes.

To Mr. E. J. Parsons, for fruit.

Silver Knightian Medal.

To Messrs. Thynne & Son, for potatoes.

Hogg Medal.

To Messrs. Stuart Low, Jarvis Brook, for Figs.

To Messrs. W. M. Scabrook & Sons, Chelmsford, for fruit.

GENERAL MEETING.

OCTOBER 11, 1927.

Sir WILLIAM LAWRENCE, Bt., in the Chair.

One hundred and seventy-five Fellows and thirty-one Associates were elected, and three Societies affiliated.

FRUIT SHOW.

OCTOBER 11, 1927.

JUDGES.

ALLGROVE, J. C.
BARNES, N. F., V.M.H.
BUSS, F.
CHAPMAN, H.
COLE, C.
COOK, C. H.
DIVERS, W. H., V.M.H.
EARL, W. J.
GIBSON, J.
GOODACRE, J. P.
JEARY, T. J.
JEFFERY, J.
JORDAN, F.

LAXTON, E.
LOVELOCK, C.
MARKHAM, H.
NIX, C. G. A., V.M.H.
PEARSON, A. H., V.M.H.
RIVERS, H. S.
SMITH, A. C.
SOWMAN, A. J.
TURNBULL, J.
VEITCH, P. C. M., V.M.H.
WAKELY, C.
WESTON, J. G.
WOODWARD, G.

Chief Awards.

The Gordon-Lennox Cup, for the most meritorious display of fruit staged by an Amateur.

To Capt. Maldwin Drummond (gr. Mr. L. A. Smith), Cadland Park, Southampton.

The George Monvo Memorial Cup, for the best exhibit of Grapes staged by an Amateur.

To the Duke of Newcastle (gr. Mr. S. Barker), Clumber, Worksop.

Class 1.—Amateurs. Collection of nine dishes of ripe dessert fruits.

First Prize, Silver Hogg Medal and £9.

To the Duke of Newcastle (gr. Mr. S. Barker), Clumber, Worksop.

Class 2.—Amateurs. Collection of six dishes of ripe dessert fruits.

First Prize, Silver Hogg Medal and £6.

To Lady Juliet Duff (gr. Mr. H. Weaver), Coombe Court, Kingston Hill.

Class 3.—Amateurs. Collection of twelve bunches of Grapes, four varieties.

First Prize, Silver Hogg Medal and £15.

To the Duke of Newcastle (gr. Mr. S. Barker), Clumber, Worksop.

Class 4.—Amateurs. Collection of four bunches of Grapes, two varieties.

First Prize, Silver Hogg Medal and £6.

To Lord Swaythling (gr. Mr. F. J. Rose), Bitterne, Southampton.

Class 13.—Amateurs. Collection of thirty dishes of hardy fruits.

First Prize, Silver Hogg Medal and £15.

To Capt. M. Drummond (gr. Mr. L. A. Smith), Cadland Park, Southampton.

Class 14.—Amateurs. Collection of twelve dishes of hardy fruits.

First Prize, Silver Hogg Medal and £6.

To Major Wingfield Digby (gr. Mr. E. Hill), Sherborne Castle, Dorset.

Class 16.—Market Growers. Four British standard boxes of dessert Apples.

First Prize, Silver Hogg Medal and £5.

To Mr. Glover Long, Lower Higham, Rochester.

Class 17.—Market Growers. Four British standard boxes of Bramley's Seedling.

First Prize, Silver Hogg Medal and £5.

To Mr. H. G. Kleinwort, Boughton Monchelsea, Maidstone.

Class 18.—Market Growers. Four British standard boxes of cooking Apples.

First Prize, Silver Hogg Medal and £5.

To the Hollesley Bay Labour Colony.

Class 21.—Market Growers. Three boxes of Conference Pears.

First Prize, Hogg Medal and £3.

To the Hollesley Bay Labour Colony.

Class 25.—Amateurs. Collection of twenty-four dishes of Apples.

First Prize, Silver-gilt Medal presented by the Fruiterers' Company and £10.

To Capt. M. Drummond (gr. Mr. L. A. Smith), Cadland Park, Southampton.

Class 26.—Amateurs. Collection of twelve dishes of Apples.

First Prize, Silver Medal presented by the Fruiterers' Company and £5.

To J. A. Stidston, Esq., Bishopsteignton, Devon.

Class 29.—Amateurs. Collection of eighteen dishes of dessert Pears.

First Prize, Silver-gilt Hogg Medal and £10.

To Capt. M. Drummond (gr. Mr. L. A. Smith), Cadland Park, Southampton.

The Affiliated Societies' Challenge Cup, which was offered for award for the best exhibit of fruit staged by an Affiliated Society, was not awarded.

GENERAL MEETING.

OCTOBER 18, 1927.

Dr. A. W. HILL, C.M.G., F.R.S., in the Chair.

Forty-three Fellows were elected and one Society affiliated.

A lecture was given by Dr. Lloyd Praeger on "Hunting Sempervivums" (see p. 281).

DEPUTATION TO PARIS.

OCTOBER 18, 1927.

Sir William Lawrence, Bt., and the Secretary, Mr. F. R. Durham, visited Paris for the Show of the Société Nationale d'Horticulture de France, and made the following awards:

Gold Medal with congratulations.

To Messrs. Vilmorin Andrieux et Cie, for Chrysanthemums and vegetables.

Gold Medal.

To Messrs. Cayeux & Leclerc, for Dahlias.

Gold Medal.

To Messrs. L. Ferard, for Chrysanthemums and herbaceous plants.

To Messrs. Nomblot Bruneau, for fruit trees and fruit.

To the Société d'Horticulture de Montreuil, for fruit.

Silver-gilt Flora Medal.

To the Ecole Municipale de Paris for a floral and botanical exhibit.

IMPERIAL FRUIT SHOW.

OCTOBER 28 TO NOVEMBER 5, 1927.

Awards made at the Imperial Fruit Show, held at Belle Vue Gardens, Manchester:

Gold Medal.

To Mr. H. Granger, Maldon, for the best four boxes of Cox's Orange in the United Kingdom section.

To Mr. B. J. Harding, Kilcot, Newent, Glos., for four boxes of Worcester Pearmain, in the United Kingdom section.

To Mr. W. L. Taylor, Chelmsford, for four boxes of Worcester Pearmain, in the United Kingdom section.

GENERAL MEETING.

NOVEMBER 1, 1927.

Mr. W. CUTHBERTSON, J.P., V.M.H., in the Chair.

Seventy-eight Fellows and two Associates were elected, and two Societies affiliated.

A lecture was given by Mr. W. Hales, A.L.S., on "Impressions gathered on a journey to Ceylon, Java and the Malay States" (see p. 235).

GENERAL MEETING.

NOVEMBER 15, 1927.

Mr. F. H. CHAPMAN in the Chair.

Seventy-three Fellows were elected, and three Societies affiliated.

A lecture was given by Mr. C. R. Fielder, V.M.H., on "The Pruning of Hardy Fruit Trees" (see p. 291).

GENERAL MEETING.

NOVEMBER 29, 1927.

Mr. EDWARD WHITE, V.M.H., in the Chair.

Fifty-five Fellows and two Associates were elected, and two Societies affiliated.

A lecture was given by Mr. W. W. Pettigrew, V.M.H., on "Municipal Gardens" (see p. 272).

GENERAL MEETING.

DECEMBER 13, 1927.

Sir WILLIAM LAWRENCE, Bt., in the Chair.

Fifty-four Fellows were elected, and six Societies affiliated.

SCIENTIFIC COMMITTEE.

JULY 5, 1927.

Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and seven other members present.

Various Liliaceae.—Mr. J. Fraser showed *Ruscus aculeatus* from Aldersey, a congested form with large cladodes; and dried specimens of *Polygonatum multiflorum* from Bucklebury, *P. officinale*, *Maianthemum bifolium*, and *Simethis bicolor* from Bournemouth.

Nail galls on lime.—Dr. Voelcker showed leaves of the common lime galled by the mite *Eriophyes tiliae*.

Pelargonium vars.—Mr. Hosking showed *Pelargonium* 'Double New Life' giving rise to a branch of the single-flowered form. Both root cuttings and seeds give rise to hermaphrodite plants as these are, the double flowered form being pistillate only.

Trifolium medium var. Ingleside.—This new form of *T. medium* with large flower heads was exhibited by Mr. J. G. White, who found it growing wild.

Rose hybrid.—Dr. Hindley sent a hybrid rose raised from *R. canina* × 'Goldfinch,' with a question as to whether there were other hybrids known with *R. canina* as one parent. It was subsequently reported that crosses between *R. canina* and the following species were upon record, viz., *R. Gallii*, *R. Jundzillii*, *R. rubrifolia*, and *R. pimpinellifolia*.

SCIENTIFIC COMMITTEE, JULY 19, 1927.

Mr. E. A. BUNYARD, F.L.S., in the Chair, and six other members present, with Mr. Giles, visitor.

Cultivated peas, etc.—Mr. Giles showed the Crown pea and a hybrid with the Acacia-leaved pea, which now in the F₂ generation had given rise to the Acacia-leaved Crown or Mummy Pea. He also showed the purple-podded and the yellow-podded varieties and the 'Mangetout' or sugar pea, which when crossed with the variety 'V.C.' gave large edible-podded peas without strings and with either flattened or inflated pods, and for comparison the pods of a wild pea from Palestine, *Pisum humile*. He also showed the purple-seeded forms of both Windsor and Long Pod broad beans, and the golden-podded forms of these plants.

Olea hardy.—Mr. Hales showed an example of *Olea* which had been growing at Chelsea in the open for the past twenty-five years.

Forsythia aberrant.—He also showed *Forsythia* with a terminal double flower with the stamens petaloid.

Various plants.—Mr. Fraser showed dried specimens of *Muscari racemosum* from Middlesex, *Scilla autumnalis* from Surrey, *Colchicum autumnale*, *Scilla verna* from Wales, *S. nutans alba* from a white-flowered colony, *Ornithogalum umbellatum*, *O. pyrenaicum*, *Lilium Martagon*, *Fritillaria Meleagris*, *Tulipa sylvestris* and *Gagea lulea*.

Arnebia echioides.—Mr. G. P. Baker showed specimens of *Arnebia echioides* growing in his garden collected in the Eastern Caucasus by Mr. Yeld and himself in 1890.

SCIENTIFIC COMMITTEE, AUGUST 3, 1927.

Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and seven other members present.

Limonium sp.—Mr. J. Fraser showed a series of British specimens of *Limonium*, including *L. Neumannii* from Hayling Island.

Variegated Aucubas.—Mr. A. Worsley said that among the seedlings of *Aucuba* in his garden he found ten very decidedly variegated of which nine were male, eight variegated of which seven were female, and two green both male, all of which had been derived from a variegated female plant. He thought, therefore, that it could not be said that variegation was peculiar to one sex.

XC PROCEEDINGS OF THE ROYAL HORTICULTURAL SOCIETY.

SCIENTIFIC COMMITTEE, AUGUST 16, 1927.

Mr. J. W. ODELL, F.L.S., in the Chair, and one other member present.

Limonium sp.—Mr. J. Fraser showed specimens of several species of *Limonium* (*Statice*) collected from various parts of Gt. Britain.

Chrysanthemum anethifolium was sent by Mr. T. E. Williams for identification.

Parnassia sp.—Lady Aberconway and the Hon. H. D. MacLaren showed a species of *Parnassia* collected by Mr. K. Ward, having rather coarser growth than our British species.

Nemesia virescens.—Dr. Hindley sent a virescent *Nemesia* which Mr. Fraser undertook to examine and report upon.

SCIENTIFIC COMMITTEE, AUGUST 30, 1927.

Sir DAVID PRAIN, F.R.S., in the Chair, and three other members present.

Myginda disticha.—Sir Wm. Lawrence sent this curious spiny Celastraceous shrub from S. America. In flower it has small pretensions to beauty, but it is botanically interesting in its habit and its alternate leaves.

Virescent plants.—A curious virescent *Delphinium* with flowers normal in structure but wholly green was shown from a Guildford garden. It was reported that the plants bearing these flowers were all propagated from a plant which bore normal flowers in 1926, and all pieces so propagated had produced green flowers.

Mr. H. H. Cook of the University, Reading, sent virescent and proliferous *Heleniums* similar to those already figured in our JOURNAL.

Mr. Fraser reported as follows upon the virescent *Nemesia* shown at the last meeting :

"*Nemesia floribunda* × *versicolor* 'Blue Gem.' The specimen showed proliferation, chloranthly and suppression of parts of the flower. Stem much branched from near the base and repeatedly so upwards. The apex of each strong branch appears to have ended in a solitary flower instead of a raceme, as in the normal form. The five-parted calyx has become separated into its component parts, often multiplied, and the sepals carried up to different levels, and subtending a peduncle as if they were bracts. These peduncles are of various lengths and terminate in flowers that have behaved like the primary ones, giving rise to shorter secondary peduncles. These give rise to ultimate clusters that appear like single flowers, though they really consist of clusters of 3-7 or more sessile or shortly pedicellate flowers. The sepals of the ultimate clusters are separated on different levels, and each subtends an ultimate flower. Sometimes one of the sepals is two or three times as long as the rest and appears like a foliaceous bract or bracteole subtending the cluster ; but there are no bracteoles on the pedicels of the normal plant. Corolla and stamens do not appear to be represented. The two carpels of the normal ovary, by a process of dialysis and proliferation or multiplication, have given rise to numerous carpels that fill up the whole centre of the flower. These carpels are more or less open along the ventral suture, and distinctly show the normal method of folding longitudinally with the sutures to the axis. The style is absent, but the stigma may be represented by a small, pale cusp, often observable at the obtuse apex of the carpel."

Prof. H. E. Armstrong.—The Committee desired that congratulations should be sent to its member Prof. Henry Armstrong, F.R.S., who to-day celebrated his golden wedding.

SCIENTIFIC COMMITTEE, SEPTEMBER 13, 1927.

Mr. WORSLEY in the Chair, and six other members present.

Certificate of Appreciation.—It was proposed by Mr. Loder, seconded by Mr. Fraser, and carried unanimously that the Certificate of Appreciation be awarded to the John Innes Horticultural Institution for their work on Varietal Characters in Pelargoniums.

Brunsdonna Parheri.—A hybrid between *Amaryllis Belladonna* var. *blanda* × *Brunsvigia Josephinae* was shown by Mr. Worsley, who remarked that the first

time of flowering from the seedling the plant had a large number of flowers in the umbel. These were fewer in subsequent seasons, with an occasional increased number during good growing seasons.

Seedling setting flower buds after damage of top shoots by frost.—Mr. Cotton stated that a seedling *Rhododendron* which had shown no signs of flowering when growing in a greenhouse was then planted in the open, and in April last had its top growths badly damaged by frost, the lower shoots being unhurt. These undamaged shoots were now set with flower buds, and it was suggested that the check of the top shoots might have had the effect of developing the flower buds on the lower shoots.

Rose galls on Willows (Cecidomyia rosaria).—A list of willows (appended) on which rose galls had been found was given by Mr. Fraser, who also showed *Salix triandra* with rose galls in the axillary buds as well as on the terminal buds, which is the usual.

Cecidomyia rosaria and 'rosette galls.'—Mr. Fraser says: "E. T. Connold says it occurs on *Salix alba*, *S. aurita*, *S. Caprea*, *S. cinerea*, and *S. purpurea*. *S. purpurea* var. 'Helix' gets its name of Rose Willow from the galls of the above insect. I have seen it on *S. triandra* var. *amygdalina*, *S. triandra* sub. sp. *Hoffmanniana* and *S. Caprea*."

Gentiana Pneumonanthe, collected on Chelwood Common, Sussex, was sent by A. E. Akhurst for naming.

SCIENTIFIC COMMITTEE, OCTOBER 18, 1927.

Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and eight other members present.

British Senecios.—Mr. Fraser showed specimens of some of the rarer British species of *Senecio*, including *Senecio Sarraceni* from Scotland, used like *S. Doria*, as a styptic, *S. paludosus* from Wicken Fen, *S. campestris* (probably var. *humilis*) from Hampshire, and *S. Jacobaea*.

Vitis Coignetiae.—Mr. Worsley showed fruits of *Vitis Coignetiae*.

Lapageria rosea was shown with three of the stamens petaloid.

Nerine white.—Mr. Worsley showed a white-flowered *Nerine* which he had raised from *N. pudica*, bearing 13 flowers on the scape. The specimen was robust and had more than the usual number of flowers on a scape (usually 8 or 9), but only 2 of the 7 expanded had 6 segments, 2 had but 5, 2 only 3, and 1 only 2 segments.

SCIENTIFIC COMMITTEE, NOVEMBER 1, 1927.

Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and seven other members present.

Senecio sp.—Mr. J. Fraser showed specimens of *Senecio vulgaris* to illustrate its variability, and hybrids between it and *S. squalidus*.

Weeds on lawns.—An inquiry regarding the identity of weeds on lawns which proved to be *Cerastium vulgatum* and *Sagina procumbens* was received from Mr. H. G. Bird of Bournemouth.

Fimbriated Primrose.—Mr. J. E. Bray of Halsted, Kent, showed a curious flower of Primrose with fimbriated petals.

Cristate Athyrium.—Mr. W. B. Cranfield sent a frond form of a cristate *Athyrium filix-foemina* raised by him three years ago from a perfectly plain-fronded variety of *A. ff. setigerum* which he called sub. var. *percristatum*. *A. ff. setigerum* was raised by the late Mr. I. Edwards of Manchester from spores of a division of the original wild find upon which Mr. Edwards' plant was a considerable advance. The frond he now submitted illustrates in a marked degree the inherent capacity for variation in some of our native ferns when once a plant has departed from the normal. Not only does the crestring extend to the pinnae and pinnules but to the ultimate segments. Upwards of a hundred plants were raised, four of which were crested, the plant from which they were taken being the best. The remainder followed parental lines or slight variants therefrom of an inferior character.

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SCIENTIFIC COMMITTEE, NOVEMBER 15, 1927.

Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and seven other members present.

British plants.—Mr. Fraser exhibited dried plants of the British *Scrophularias* and remarked that *S. alata* which was near *S. nodosa* was confined to the S.W. of England. Mr. Hanbury stated that the plants of *S. alata* which he grew had broader wings and that he would show plants at a future meeting.

Lilium ochraceum.—Mr. Van der Weyer brought a form of *Lilium ochraceum* (*nepalensis*) with broader leaves and darker flowers than the type plant.

Vegetables damaged.—Dr. Voelcker brought plants of Kale with club-root. He also exhibited celery plants badly damaged at the roots by the caterpillar of the swift-moth, *Heptalus Humuli*.

SCIENTIFIC COMMITTEE, NOVEMBER 29, 1927.

Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and five other members present.

Mentha sp.—Mr. Fraser showed two new varieties of Mint which he had grown in his garden for twelve years. They were *Mentha* × *cordifolia* (var. *dourensis*) and *M. hircina* var. *hirsuta*, both from The Dour, N. Aberdeen.

SCIENTIFIC COMMITTEE, DECEMBER 13, 1927.

Mr. A. WORSLEY in the Chair, and five other members present.

Angraecum maxillarioides.—This rather small-flowered *Angraecum* was shown by Sir Jeremiah Colman, to whom a vote of thanks was unanimously accorded.

Thistles.—Mr. J. Fraser showed specimens of thistles (*Cnicus arvensis* and *C. arvensis* var. *purpureocaulis*). The question of seed production in plants usually propagated vegetatively was raised, but there does not appear to be any definite antagonism between the two methods in the majority of plants.

Proliferous Swede.—Mr. G. F. Wilson showed on behalf of Mr. Waldron of Dundee a Swede which had produced numerous buds swollen at the base into small bulbs on the neck of the Swede. No exciting cause could be traced.

Scale on Lilac.—Branches of Lilac were sent from Ashton Hayes Gardens, Chester, badly attacked by scale insects, which were seriously affecting the life of the trees.

[The scale insect proved to be *Chionaspis salicis*.]

FRUIT AND VEGETABLE COMMITTEE.

JULY 5, 1927.

Mr. C. G. A. Nix, V.M.H., in the Chair, and nine other members present.

Awards Recommended :—

Silver Hogg Medal.

To Messrs. Bunyard, Maidstone, for Cherries.

Other Exhibits.

Mr. J. Kettle, Corfe Mullen : Raspberries.

Messrs. Laxton, Bedford : soft fruits.

Mr. G. Grimmen, Farringdon : seedling Raspberry.

Miss E. M. Allen, Stroud : seedling Raspberry.

FRUIT AND VEGETABLE COMMITTEE, JULY 19, 1927.

Mr. C. G. A. Nix, V.M.H., in the Chair, and thirteen other members present.

Awards Recommended :—

Gold Medal.

To Messrs. Allgrove, Slough, for Gooseberries and Currants.

Silver-gilt Hogg Medal.

To Messrs. Rivers, Sawbridgeworth, for Cherries in boxes.

Bronze Hogg Medal.

To Messrs. Laxton, Bedford, for Gooseberries, Currants and Raspberries.

Cultural Commendation.

To Sir Joseph Titchborne, Bt., Alresford, for Aubergine 'Goodchild's Selected.'

Other Exhibits.

Mr. H. Hemsley, Crawley : berries.

Mr. H. E. Joly, Rathagan : Gooseberry 'Golden Wonder.'

Mr. J. J. Kettle, Corfe Mullen : Raspberry 'Lord Lambourne.'

Messrs. R. Veitch, Exeter : Raspberry 'Exeter Yellow' (recommended for trial at Wisley).

Messrs. McCormick, Kells : Jamberry.

Mr. A. Shears, Lee-on-Solent : seedling Raspberry.

Messrs. Sutton, Reading : Beans and Peas.

Mr. W. J. Earl, Knowsley : Peach for identification.

FRUIT AND VEGETABLE COMMITTEE, AUGUST 3, 1927.

Mr. C. G. A. Nix, V.M.H., in the Chair, and nine other members present.

No awards were recommended on this occasion.

Exhibits.

Mr. J. J. Kettle, Corfe Mullen : Raspberries.

Lady Juliet Duff, Kingston Hill : Peaches, Nectarines and Apples.

Sir Wm. Lawrence, Bt., Burford : Tomatos.

Mr. G. W. Stacey, Chorley Wood : Cucumber 'Apple-shaped.'

Mrs. E. L. Eady, Southampton : seedling Nectarines 'Edith Eady' and 'Louise Eady.'

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Mr. H. Everitt, Newton Abbott : seedling Apricot.
Mr. R. Staward, Ware : Raspberry ' Imperial.'

R.H.S. Gardens, Wisley : Black Currant ' Daniels September'; Melon ' Althorpe' (grown from seed sent by Major the Hon. E. H. Wyndham, Bicester; the Award of Merit of July 5, 1921, was confirmed).

FRUIT AND VEGETABLE COMMITTEE, AUGUST 16, 1927.

Mr. E. A. BUNYARD, F.L.S., in the Chair, and nine other members present.

No awards were recommended on this occasion.

The Plum ' Cambridge Gage,' shown by Messrs. Bunyard, Maidstone, was recommended for inclusion in the Commercial Fruit Trials at Wisley.

Other Exhibits.

Mr. J. J. Kettle, Corfe Mullen : Raspberries.
Messrs. Daniels, Norwich : Black Currant ' Daniels September.'
Mr. H. E. Joly, Rathangan : Gooseberries ' Golden Wonder' and seedling.
Mr. T. Pateman, Hatfield : Black Currant ' Florence.'
Messrs. Bunyard, Maidstone : Plums.
Messrs. Laxton, Bedford : Veitchberry.

The recommendations made by the sub-committee visiting Wisley to judge the trial of late culinary Peas were confirmed.

FRUIT AND VEGETABLE COMMITTEE, AUGUST 30, 1927.

Mr. J. CHEAL, V.M.H., in the Chair, and nine other members present.

Awards Recommended :—

Silver-gilt Hogg Medal.

To Messrs. Allgrove, Slough, for Plums, Apples, etc.

Other Exhibits.

Mr. J. J. Kettle, Corfe Mullen : Raspberries.
Messrs. Prior, Colchester : seedling Plum.
Mr. H. Hemsley, Crawley : Apples.
Messrs. Laxton, Bedford : Plum ' Black Prince'; Apple ' Owen Thomas.'
Messrs. Bunyard, Maidstone : Plums ' Gordon Castle' and ' Bejonnières.'
Mr. E. F. Grey-Clarke, East Grinstead : seedling Apple.

FRUIT AND VEGETABLE COMMITTEE, SEPTEMBER 13, 1927.

Mr. C. G. A. NIX, V.M.H., in the Chair, and thirteen other members present.

Awards Recommended :—

Gold Medal.

To Messrs. Sutton, Reading, for vegetables.
To Messrs. Dobbie, Edinburgh, for Potatos.

Bronze Hogg Medal.

To Messrs. Hemsley, Crawley, for Apples and Plums.

Other Exhibits.

Mr. J. J. Kettle, Corfe Mullen : Raspberries.
Messrs. Watson, Killiney : seedling Apple.
Mr. J. Blowers, Weeley : seedling Apple.
Mr. W. F. Miles, Torquay : Apple ' Melba.'

The recommendations made by the sub-committee visiting Wisley to judge the trials of Parsley and Sweet Corn were confirmed.

FRUIT AND VEGETABLE COMMITTEE, SEPTEMBER 28, 1927.

Mr. A. C. PEARSON, V.M.H., in the Chair, and nine other members present.

No awards were recommended on this occasion.

The seedling Plum exhibited by Mr. G. W. Laley, Beenham, was recommended for inclusion in the Commercial Fruit Trials at Wisley.

Exhibits.

Messrs. Godden, Hythe : seedling Apple.
 Mr. W. R. Cox, Woodraton : Apple 'Eileen Cox.'
 Mr. A. Evans, Horsham : seedling Apple.
 Mr. W. Honeysett, Hadleigh : seedling Apple.

FRUIT AND VEGETABLE COMMITTEE, OCTOBER 11, 1927.

Mr. C. G. A. NIX, V.M.H., in the Chair, and twenty-one other members present.

Awards Recommended :—*Silver-gilt Hogg Medal.*

To Messrs. Rivers, Sawbridgeworth, for collection of fruit.
 To Messrs. Cheal, Crawley, for collection of fruit.
 To Messrs. Bunyard, Maidstone, for collection of fruit.
 To Messrs. Allgrove, Slough, for collection of fruit.
 To University of Reading, for collection of fruit.

Silver Hogg Medal.

To The Barnham Nurseries, Barnham, for collection of fruit.
 To Messrs. Laxton, Bedford, for collection of fruit.
 To Messrs. Seabrook, Chelmsford, for collection of fruit.
 Mr. W. J. H. Whittall, Haslemere, for collection of Apples (single specimens of 135 varieties).

Bronze Hogg Medal.

To Messrs. Spooner, Hounslow, for collection of fruit.
 To Messrs. Daniels, Norwich, for collection of fruit.
 To Swanley Horticultural College, Swanley, for fruit.

The Apple (unnamed, probably 'Bachelor's Glory') exhibited by Mr. C. Webster, Gordon Castle Gardens, Fochabers, and the Apple 'Thorpe's Peach,' exhibited by Messrs. Thorpe, Brackley, were recommended for inclusion in the Commercial Fruit Trials at Wisley.

Other Exhibits.

Mr. H. Brotherston, Hythe : seedling Apple.
 Capt. N. Hanbury, Ware : Apple 'Munden Glory.'
 Mr. C. E. Toghill, Forest Hill : Apple 'Toghill Seedling.'
 Mr. H. Waite, New Malden : seedling Apple.
 Mr. G. Lovelock, Hereford : Apple 'Dan's Joy.'
 Mr. J. Olney, St. Albans : Apple 'Field Marshal.'
 Messrs. Wilson, Norwich : Apple 'Pitcher's Nonpareil.'
 Mr. Hanann, Horsham : seedling Apple.
 Mr. A. T. Godwin, Maidstone : Peach 'Salway.'
 Mr. R. Fairman, Crawley : Apple 'Crawley Pearmain.'
 Mr. W. Ogg, Elgin : seedling Apple.
 Lady Hadden, Berkhamstead : Cherries.
 Mr. C. F. Wood, Hayes : seedling Apple.
 Mr. W. Buckland, London : Apple 'Peter Collinson.'
 Mr. L. Cheeseman, Higham : seedling Apple.
 Mr. Sowman, Preston : seedling Apple.
 Mr. P. C. M. Veitch, Exeter : Apples (West Country varieties).

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FRUIT AND VEGETABLE COMMITTEE, OCTOBER 18, 1927.

Mr. C. G. A. NIX, V.M.H., in the Chair, and twenty-one other members present.

Awards Recommended :—

Gold Medal.

To Hon. Vicary Gibbs (gr. Mr. E. Beckett) Aldenham House, Aldenham, for vegetables.

Silver-gilt Hogg Medal.

To Messrs. Notcutt, Woodbridge : for Apples, etc.

Other Exhibits.

Sir Wm. Lawrence, Bt., Burford : Celery 'Fordhook' and 'Golden Plume.'

Mr. P. A. Malpas, Fleet : Apple 'Malpas Seedling.'

Mr. J. W. Boyce, Welney : Apples.

Mr. W. F. Macey, Worcester Park : seedling Apple.

FRUIT AND VEGETABLE COMMITTEE, NOVEMBER 1, 1927.

Mr. J. CHEAL, V.M.H., in the Chair, and eight other members present

Awards Recommended :—

Gold Medal.

To Messrs. Bunyard, Maidstone : for Apples.

Silver-gilt Knightian Medal.

To Messrs. Carter, Raynes Park, for Potatoes.

Other Exhibits.

Messrs. House, Bristol : Apple 'John Standish.'

Mr. F. S. Wilcox, Duston : seedling Apple.

Mr. A. W. Hyde, Kilkenny : seedling Apple.

Mr. H. Chapman, Rye : Apple 'Saltcote Pippin.'

Mr. E. F. Grey-Clarke, East Grinstead : seedling Apple.

Messrs. Stevens, Sidmouth : Apple 'Woolbrook Russet.'

Mr. V. Manders, Kings Lynn : seedling Apple.

Mr. J. Coveney, Bearstead : seedling Apple.

Mr. T. Carter, Waltham Abbey : seedling Apple.

Board of Education Horticultural Society, London : seedling Apple.

The recommendations made by the sub-committee visiting Wisley to judge the trials of spring-sown Onions and Beetroot were confirmed.

FRUIT AND VEGETABLE COMMITTEE, NOVEMBER 15, 1927.

Mr. C. G. A. NIX, V.M.H., in the Chair, and twelve other members present

Awards Recommended :—

Gold Medal.

To Messrs. Sutton, Reading, for Potatoes.

Silver Hogg Medal.

To Messrs. Laxton, Bedford, for Apples.

Bronze Hogg Medal.

To Mr. H. Hemsley, Crawley : for Apples.

Other Exhibits.

Messrs. Bunyard, Maidstone, Apples in season.

Messrs. House, Bristol : Apple 'John Standish.'

Mr. H. E. Joly, Kenley : seedling Apples.

Mrs. W. J. Dowle, Caldicot : seedling Apple.
Mr. A. E. Allies, Worcester : Apple 'Allies Pippin.'
Mr. W. F. Lloyd James, Hoarwithy-on-Wye : seedling Apple.
Messrs. Stuart Low, Enfield : Apple 'Sops in Wine.'
Mr. A. A. Thompson, Ellesmere : seedling Apple.
Mr. Hybberd, Bromley : seedling Apple.

FRUIT AND VEGETABLE COMMITTEE, NOVEMBER 29, 1927.

Mr. C. G. A. Nix, V.M.H., in the Chair, and fourteen other members present.

Awards Recommended :—

Silver-gilt Hogg Medal.

To Hon. Vicary Gibbs (gr. Mr. E. Beckett), Aldenham, for Apples, Pears, Grapes, etc.

Other Exhibits.

Mr. A. C. Batchelor, Leigh-on-Sea : Apple 'Batchelor's Pippin.'
Miss H. Sewell, S. Kensington : preserves.
Pickering Cottage Preserves, Loose : preserves.
Mr. W. H. Divers, V.M.H., Surbiton : Apples for comparison.

FRUIT AND VEGETABLE COMMITTEE, DECEMBER 13, 1927.

Mr. J. CHEAL, V.M.H., in the Chair, and ten other members present.

No awards were recommended on this occasion.

Exhibits.

Mr. A. Allardice, Bridgenorth : Apple 'Allardice Cardross.'
Mr. F. Bostock, Northampton : Apples for comparison.
Mr. P. C. M. Veitch, Exeter : Apples.
Mrs. Fleming, Uxbridge : preserves.
Miss H. Sewell, S. Kensington : preserves.
Miss D. Carter, Peasmarsh : preserves.

FLORAL COMMITTEE.

JULY 5, 1927.

Section A.

Mr. H. B. MAY, V.M.H., in the Chair, and fifteen other members present.

Awards Recommended :—

Gold Medal.

To Messrs. Blackmore & Langdon, Bath, for Delphiniums.

Silver-gilt Banksian Medal.

To Messrs. Harkness, Hitchin, for Roses.

Silver Banksian Medal.

To Mr. T. Bones, Cheshunt, for Delphiniums.

To Messrs. Ladhams, Southampton, for herbaceous plants.

To Messrs. Warner, Colchester, for Roses.

To Messrs. Waterer Sons & Crisp, Twyford, for *Iris Kaempferi*.

Banksian Medal.

To Mr. Archer & Daughter, Ashford, for Roses.

To Messrs. F. Cant, Colchester, for Roses.

To Mr. T. Carlile, Twyford, for Delphiniums.

To Messrs. Hewitt, Solihull, for Delphiniums.

To Messrs. Easlea, Leigh-on-Sea, for Roses.

To Messrs. Engelmann, Saffron Walden, for Carnations.

To Mr. G. Lilley, Slough, for Roses.

To Mr. J. H. Pemberton, Havering, for Roses.

Award of Merit.

To *Begonia* 'Mrs. Ward' (votes 14 for), from Messrs. Blackmore & Langdon, Bath. A very large double variety of a rich rose-pink colour.

To *Begonia* 'Sir Philip Sassoon' (votes 8 for), from Messrs. Blackmore & Langdon, Bath. Another very large double variety with vivid crimson waved petals.

To *Delphinium* 'Howard H. Crane' (votes 8 for), from Messrs. Blackmore & Langdon, Bath. A vigorous variety producing fine spikes of large semi-double mauve flowers with pale blue outer petals and white centres.

To *Delphinium* 'Mrs. Foster Cunliffe' (votes unanimous), from Messrs. Blackmore & Langdon, Bath. A strong grower with very large double mauve flowers with pale blue outer petals. It is claimed for this variety that it does not set seed and therefore has a greatly extended period of flowering.

To Rose 'Atalanta' (votes 8 for), from Dr. A. H. Williams, Roffey, Horsham. A very free flowering vigorous climbing Rose which was raised by the exhibitor as the result of a cross between 'Paul Ploton' ♀ and 'William Allen Richardson' ♂. It is also useful for cutting and makes a beautiful weeping standard. The flowers are double, of medium size, very sweetly scented and are borne in sprays. They open a pale salmon-pink later becoming pale bluish pink.

To Rose 'Everest' (votes unanimous), from Messrs. Easlea, Leigh-on-Sea. A large well-shaped, broad-petalled, creamy-white Hybrid Tea.

Selected for Trial at Wisley.

Delphinium 'Rosetta,' from Mr. H. G. Rayment, Harpenden.

Other Exhibits.

Messrs. Bunyard, Maidstone : Roses.

Messrs. B. Cant, Colchester : Roses.

Messrs. Clark, Dover : herbaceous plants.

Mr. W. H. Hart, Baldock : Delphiniums.

Misses Hopkins, Coulsdon : herbaceous plants.

Messrs. Laxton, Bedford : Roses.
 W. Miles, Esq., Mickleham : 'Pink ' Surrey Border.'
 Messrs. Prichard, Christchurch : herbaceous plants.
 Messrs. Prior, Colchester : Roses.
 Mr. W. J. Ren, Falmouth : Begonia ' Rose Hill Beauty.'
 The Rt. Hon. the Earl of Stair, D.S.O., Castle Kennedy : Campanula ' White Pearl.'
 Mr. H. Weller, Ashted : Rose ' Lady Beaverbrook.'

Section B.

Mr. G. W. E. LODER, F.L.S., in the Chair, and sixteen other members present.

Awards Recommended :—

Silver Banksian Medal.

To Mr. Amos Perry, Enfield, for herbaceous plants.

Banksian Medal.

To Messrs. Russell, Richmond, for climbers and alpine plants.

To Messrs. Tucker, Oxford, for alpine plants.

To Mr. F. G. Wood, Ashted, for alpine plants.

Award of Merit.

To *Eremurus Bungei* var. *sulphureus* (votes 9 for), from Sir Wm. Lawrence, Bt., Burford. A handsome herbaceous plant bearing massive spikes densely furnished with large flowers of clear yellow.

To *Mutisia retusa* var. *glaberrima* (votes 9 for), from Sir Wm. Lawrence, Bt., Burford. An interesting and beautiful plant for sheltered positions in favoured localities. It climbs by means of tendrils at the ends of its leathery, dark green leaves. The Daisy-like flowers are three inches across, with blush-coloured, somewhat twisted rays and a small purple central disc.

To *Nuttallia cerasiformis*, female form, (votes 13 for), from the University Botanic Garden, Cambridge. Well-fruited sprays of this hardy shrub were shown. The oval fruits are at first yellow and later plum-purple. The male form also should be planted to ensure fruit-production, and is very attractive when in flower in early spring.

To *Onosma Hookeri* (votes unanimous), from Lt.-Col. Messel, Handcross. This species was collected by Capt. Kingdon Ward and bears his number 6115. The specimen exhibited had an erect stem rising from a rosette of narrow, deep green, hispid leaves. The flowers are deep purplish-blue in colour, and in other respects are not unlike those of the well-known *O. tauricum*.

To *Phlox argillacea* (votes unanimous), from T. Hay, Esq., Hyde Park. An American species of neat habit. The height is about eighteen inches. The leaves are narrow and the small, pale lilac flowers are borne in dense terminal panicles.

Other Exhibits.

University Botanic Garden, Cambridge : *Ononis Natrix*.

Messrs. Elliott, Stevenage : *Digitalis dubia*.

Dr. Hendley, Littleport : *Rosa hybrid*.

Sir Wm. Lawrence, Bt., Burford : *Veronica perfoliata*, *Philadelphus* 'Pride of the Valley.'

Messrs. Prichard, Christchurch : *Linaria cymbalaria variegata*.

J. E. G. White, Esq., Woking : *Trifolium medium* 'Ingleside var.'

FLORAL COMMITTEE, JULY 19, 1927.

Section A.

Mr. J. F. McLEOD in the Chair, and fourteen other members present.

Awards Recommended :—

Silver-gilt Banksian Medal.

To Messrs. Allwood, Haywards Heath, for Carnations.

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Silver Banksian Medal.

To Mr. J. Douglas, Great Bookham, for Border Carnations
To Messrs. Engelmann, Saffron Walden, for Carnations.
To Mr. H. J. Jones, Lewisham, for Phloxes.
To Messrs. Ladhams, Southampton, for herbaceous plants.
To Messrs. Low, Enfield, for Carnations, etc.
To Messrs. Lowe & Gibson, Crawley Down, for Carnations.
To Mr. J. H. Pemberton, Havering, for Roses.
To Messrs. Russell, Richmond, for stove plants.
To Messrs. Sutton, Reading, for annuals.
To Mr. C. Wall, Bath, for Carnations.

Banksian Medal.

To Messrs. Baker, Codsall, for Delphiniums.
To the Burbage Nurseries, Hinckley, for Roses.
To Messrs. Rich, Bath, for herbaceous plants.
To Messrs. Seymour & Anderson, Nazeing, for Carnations.
To Messrs. Waterer Sons & Crisp, Twyford, for herbaceous plants.
To Mr. Yandell, Maidenhead, for Violas.
The awards recommended to Annual Poppies on trial at Wisley were confirmed.

Selected for trial at Wisley.

Delphinium 'Anne Baker' from Messrs. Baker, Codsall.
Viola 'Benthall' and Viola 'Knockdolian' from Miss M. L. Maw, Merstham, Surrey.

Other Exhibits.

Messrs. Bowell & Skarratt, Cheltenham : Linaria 'Canon J. Went.'
R. E. Butcher, Esq., Brundall : Viola 'Magpie.'
Lady Brodie Henderson, Hertford : Carnation 'Joan Henderson.'
Messrs. S. Low, Enfield : Carnation 'Happidais.'
Mr. T. H. Thelwell, Whitchurch : Sweet Pea.
Mrs. Sofer Whitburn, Amport St. Mary's : Carnation 'Amport Glory.'
Messrs. Wood, Taplow : Sidalcea 'Interlaken.'

Section B.

Mr. G. W. E. LODER, F.L.S., in the Chair, and twenty other members present.

Awards Recommended :—

Silver Banksian Medal.

To Messrs. Prichard, Christchurch, for alpine plants.
To Mr. G. Reuche, Keston, for herbaceous plants.
To Messrs. Veitch, Exeter, for shrubs.

Banksian Medal.

To Mr. F. G. Wood, Ashted, for herbaceous and alpine plants.

First Class Certificate.

To *Clethra Delavayi* (votes unanimous), from G. W. E. Loder, Esq., Ardingly. An extremely handsome species. The lanceolate leaves are dark green above and glaucous beneath, and the young growths and flower stalks are tinged with red. The flowers are white, large and of good substance, and are borne in dense terminal racemes.

Award of Merit.

To *Carmichaelia australis* (votes 9 for, 3 against), from G. W. E. Loder, Esq., Ardingly. This is a half-hardy shrub, native to New Zealand. The slender branches are covered with small lilac flowers, giving the plant somewhat the appearance of a diminutive *Cytisus*.

To *Feijoa Sellowiana* (votes unanimous), from Ingham Whitaker, Esq., Lymington. An evergreen shrub requiring some protection in all but favoured positions. The leaves are dark green and leathery. The flowers are dark crimson within and buff-coloured on the outside, with conspicuous stamens.

To *Gaultheria trichophylla* (votes 12 for), from Lionel de Rothschild, Esq., Exbury. The present plant was shown under the number 1191 Farrer. *G. trichophylla* was previously granted an A.M. on July 16, 1918, and is described in the Journal, vol. xlv, p. 71.

To *Hymenocallis spectiosa* (votes unanimous), from Sir Wm. Lawrence, Bt., Burford. Otherwise known as *Pancratium speciosum*, this has long been in cultivation. It is a stove plant, producing tall scapes of narrow-petalled white flowers which exude a pleasant fragrance.

To *Lobelia Tupa* (votes 6 for, 3 against), from G. W. F. Loder, Esq., Ardingly. A handsome and vigorous herbaceous plant for a warm place. When well grown, its stout racemes of deep red flowers and downy, pale green leaves are highly ornamental.

To *Lomatia ferruginea* (votes unanimous), from H. Armytage Moore, Esq., Saintfield, Co. Down. A tender shrub with ornamental, finely divided foliage of pleasing if subdued hue. Young specimens are often exhibited: flowering specimens are less frequently seen. The curious Proteaceous flowers are bright red within and golden yellow on the outside.

To *Maranta Porteana variegata* (votes 8 for), from Messrs. L. R. Russell, Richmond. This is an ornamental-foliaged stove plant. The leaves are prettily marked on the upper surface with contrasting patches of colour, and are purple beneath.

To *Mitraria coccinea* (votes unanimous), from G. W. F. Loder, Esq., Ardingly. A handsome, half-hardy, subcaudant shrub bearing small, coarsely-toothed leaves of pale green. The pendent flowers are borne singly in the leaf-axils. The tubular corollas are bright scarlet.

To *Sabbatia campestris* (votes 12 for), from T. Hay, Esq., Hyde Park. This half-hardy annual was introduced some sixty years ago, but is seldom seen. It is a branching plant with large pink, yellow-centred flowers, and has been used successfully as a bedding plant in Hyde Park.

To *Tecoma jasminoides* (votes unanimous), from Lt.-Col. L. C. Messel, Handcross. A desirable climbing shrub for the cool greenhouse, bearing dark green, pinnate foliage and clusters of pale pink flowers marked with crimson in the throat.

Other Exhibits.

Mr. F. Bonskill, Market Bosworth: *Veronica japonica*.

Col. S. R. Clarke, Cuckfield: *Gentiana Waltoni*, *Hydrangea Thunbergii*.

Messrs. Ladhams, Southampton: *Veronicas* 'Rose Queen,' 'Purity.'

T. Hope Mason, Esq., Reigate: *Thalictrum sativum*.

G. W. F. Loder, Esq., Ardingly: *Nolopastum Carmichaelia*.

Miss Maw, Merstham: *Larandula nana compacta*, *L. vera*.

Lt.-Col. Messel, Handcross: *Meliosma myriantha*, *Ligustrum sinense*, *Spiraea assurgens*, *Plagianthus Lyallii* var. *Nymans*, *Cornaria terminalis* var. *xanthocarpa*.

H. Armytage Moore, Esq., Saintfield: *Rhododendron crassum*, *Leptospermum Nichollii*.

L. de Rothschild, Esq., Exbury: *Rhododendron Jenkinsii*.

Ingham Whitaker, Esq., Lymington: *Aegle sepiaria*, *Tecoma grandiflora*.

FLORAL COMMITTEE, AUGUST 3, 1927.

Section A.

Mr. H. B. MAY, V.M.H., in the Chair, and thirteen other members present.

Awards Recommended:—

Silver-gilt Banksian Medal.

To Hon. Vicary Gibbs (gr. Mr. E. Beckett), Elstree, for scented Pelargoniums.

To Mr. H. J. Jones, Lewisham, for Phloxes.

To Messrs. Kelway, Langport, for Gladioli.

Silver Banksian Medal.

To Messrs. B. R. Cant, Colchester, for Roses.

To Messrs. Cuthbert, Southgate, for Gladioli.

To Napsbury Mental Hospital (gr. Mr. Jennings), St. Albans, for Campanulas.

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To Messrs. Ladhams, Southampton, for herbaceous plants.
To Messrs. Prichard, Christchurch, for herbaceous plants.
To Messrs. Waterer Sons & Crisp, Twyford, for herbaceous plants.

Banksian Medal.

To Messrs. Baker, Codsall, for Astilbes.
To Messrs. Cheal, Crawley, for herbaceous plants.
To Messrs. Engelmann, Saffron Walden, for Carnations.
To Mr. H. Hemsley, Crawley, for Sidalceas.
To Messrs. Langridge, Westerham, for Gladioli.

Selected for trial at Wisley.

Iceland Poppy 'Moonbeam' from Mrs. Thornely, Devizes.
Phlox 'Daily Sketch' from Mr. H. J. Jones, Lewisham.
Phlox 'Light of Codsall' from Messrs. Baker, Codsall.

Other Exhibits.

Messrs. Cheal, Crawley: Pentstemon 'County Oak.'
Messrs. S. Low, Enfield: Carnations and Roses.
Napsbury Mental Hospital, St. Albans: Carnation 'Sir William Lobjoit.'
Mrs. Sherlock, Cambridge: Antirrhinum 'Henry Sherlock.'

Section B.

Mr. G. W. E. LODER, F.L.S., in the Chair, and fourteen other members present.

Awards Recommended:—

Banksian Medal.

To Messrs. L. R. Russell, Richmond, for shrubs and climbers.

Award of Merit.

To *Gaultheria hispida* (votes 8 for), from G. W. E. Loder, Esq., Ardingly. Fruiting sprays of this uncommon shrub were shown. The lanceolate dentate leaves are carried on erect, reddish branches, and the large white, rose-tinted fruits are produced in long axillary racemes.

To *Lathyrus nervosus* (votes unanimous), from T. Hay, Esq., Hyde Park. This is 'Lord Anson's Blue Pea,' which, although introduced in 1744, has never become common, owing no doubt to the difficulty of its cultivation. The blue flowers are borne in axillary racemes of four or five, and are sweetly scented. The leaflets and stipules are broad, and pale grey-green in colour.

To *Leptospermum laevigatum* (votes unanimous), from G. W. E. Loder, Esq., Ardingly. This is a very beautiful member of an attractive genus. The numerous small leaves are covered with fine, silvery hairs and greatly enhance the brilliance of the numerous pure white flowers.

Other Exhibits.

The Hon. Vicary Gibbs, Elstree: *Plagianthus I. yalli* var. *glabrata*.
The Misses Hopkins, Coulsdon: rock plants.
G. W. E. Loder, Esq., Ardingly: *Hypericum galioides*, *Gaultheria* sp.
Lt.-Col. Messel, Handcross: *Thunbergia natalensis*.
G. W. Stacey, Esq., Chorley Wood: *Lupinus Cruikshanksii*.

FLORAL COMMITTEE, AUGUST 16, 1927.

Section A.

Mr. H. B. MAY, V.M.H., in the Chair, and fourteen other members present.

Awards Recommended:—

Gold Medal.

To Messrs. Konijnenburg & Mark, Noordwijk, Holland, for Gladioli.

Silver-gilt Banksian Medal.

To Messrs. Carter, Raynes Park, for Gladioli.
 To Mr. H. J. Jones, Lewisham, for Phloxes.
 To Messrs. Kelway, Langport, for Gladioli.

Silver Banksian Medal.

To Messrs. Bath, Wisbech, for Gladioli.
 To Messrs. B. R. Cant, Colchester, for Roses.
 To Messrs. Cuthbert, Southgate, for Gladioli.
 To Messrs. Dickson, Newtownards, for Roses.
 To Messrs. Dobbie, Edinburgh, for Gladioli and Zinnias.
 To Messrs. Ladhams, Southampton, for herbaceous plants.
 To Mr. J. H. Pemberton, Havering, for Roses.

Banksian Medal.

To Mr. E. Ballard, Colwall, for Echinaceas.
 To Messrs. Engelmann, Saffron Walden, for Carnations.
 To Mr. Hemsley, Crawley, for Sidalceas.
 To Messrs. House, Bristol, for Scabious.
 To Messrs. Rich, Bath, for Roses and Phloxes.
 To Messrs. Stewart, Wimborne, for Gladioli.

Award of Merit.

To *Lobelia* 'Shirley Crimson' (votes unanimous), from Messrs. Ladhams, Southampton. A very handsome, tall herbaceous plant with large purplish leaves and erect spikes of large bright crimson flowers. The plant is said to be quite hardy and suitable for a bog or water-side garden. Its parents are *L. fulgens* and *L. sylvatica*.

Selected for trial at Wisley.

Gladiolus 'Langport Scarlet,' G. 'Mr. Peel,' and G. 'Perfect Peace,' from Messrs. Kelway, Langport.
Phlox 'Sweetheart,' from Messrs. Rich & Cooling, Bath.

The following Dahlias were selected by the Joint Dahlia Committee:—

From Messrs. Cheal, Crawley:

'Pink Perfection' (Min. Pæony).

From Messrs. Stredwick, St. Leonards-on-Sea:

'Alfred Dyer' (Dec.), 'Dulcet' (Cactus), 'Mrs. Fred. Warner' (Cactus), 'Mrs. S. Sandeman' (Cactus), 'Redpole' (Cactus), 'R. H. Holton' (Dec.).

Other Exhibits.

A. J. Bliss, Esq., Tavistock: *Gladiolus* 'Cecilia.'
 W. Butler, Esq., Hemel Hempstead: *Chrysanthemum* 'Miss Annie Thomson.'
 Mr. J. Golding, Fordham: *Scabiosa caucasica* *Goldingensis*.
 Mr. H. Hemsley, Crawley: *Sidalcea* 'Miss M. Walters Anson.'
 Mr. H. Prins, Wisbech: *Gladioli*.
 Messrs. Stark, Fakenham: *Sidalcea* 'The Jewel.'
 Mrs. Marion Stewart, Richmond: *Delphinium* 'Wm. Stewart.'
 Mr. W. Wells, Jun., Merstham: *Gypsophila* 'Bristol Fairy.'

Section B.

The Hon. H. D. McLAREN, C.B.E., in the Chair, and ten other members present.

Awards Recommended:—*Banksian Medal.*

To Messrs. Russell, Richmond, for climbing plants.

Award of Merit.

To *Rhododendron prophantum* (votes unanimous), from L. de Rothschild, Esq., Exbury. A most beautiful species collected in 1919 by Forrest in Upper Burma, where it attains a large size. The leaves are large, dark green and brown-tomentose on the undersides. The flowers are borne on rather long stalks in somewhat lax trusses. Their colour is a rich, glowing crimson.

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To *Watsonia* 'Orange Beauty' (votes 6 for, 1 against), from Lady Aberconway and the Hon. H. D. McLaren, Bodnant. This should prove a useful addition to the list of *Watsonias* at present in cultivation. The flowers are similar in shape and size to those of *W. Meriana*, but light orange in colour.

Other Exhibits.

Lady Aberconway and the Hon. H. D. McLaren, Bodnant: *Watsonia Galpinii*, *Parnassia* sp. K.W. 6268.

University Botanic Garden, Cambridge: *Houttynia cordata*, *Achimenes Harveyi*.

Misses Hopkins, Coulsdon: rock garden.

Sir John Ramsden, Gerrards Cross: *Gentiana Veitchiorum*.

FLORAL COMMITTEE, AUGUST 30, 1927.

Section A.

Mr. H. B. MAY, V.M.H., in the Chair, and eighteen other members present.

Awards Recommended :—

Silver-gilt Banksian Medal.

To Messrs. Cheal, Crawley, for Dahlias and Phloxes.

To Mr. H. J. Jones, Lewisham, for Kniphofias and Phloxes.

To Messrs. Kelway, Langport, for Gladioli.

To Mr. J. H. Pemberton, Havering, for Roses.

Silver Banksian Medal.

To Messrs. Bath, Wisbech, for Gladioli.

To Messrs. Dobbie, Edinburgh, for Marigolds.

To Messrs. House, Bristol, for Kniphofias and Scabious.

To Messrs. Prichard, Christchurch, for herbaceous plants.

To Messrs. Prior, Colchester, for Roses.

Banksian Medal.

To Messrs. Allwood, Haywards Heath, for Carnations.

To Messrs. B. K. Cant, Colchester, for Roses.

To Messrs. F. Cant, Colchester, for Roses.

To Messrs. Engelmann, Saffron Walden, for Carnations.

To Messrs. Fairbairn, Carlisle, for Phloxes.

To Mr. Hemsley, Crawley, for Sidalceas.

To Messrs. Langridge, Westerham, for Gladioli.

To Messrs. Stredwick, St. Leonards-on-Sea, for Dahlias.

To Messrs. Sutton, Reading, for Asters.

Award of Merit.

To *Lobelia cardinalis* 'Huntsman' (votes 12 for), from A. J. Macself, Esq., Reading. A very vigorous and showy herbaceous plant with stout, long purplish stems bearing deep scarlet flowers.

To *Montbretia* 'Lady Wilson' (votes unanimous), from Hon. Mrs. Montagu (gr. Mr. J. E. Fitt), Attleborough. A large, bright yellow variety with a very effective sheen of orange. It is the result of a cross between the varieties 'Henry VIII' and 'His Majesty.'

To *Montbretia* 'R. C. Notcutt' (votes unanimous), from Hon. Mrs. Montagu (gr. Mr. J. E. Fitt), Attleborough. A large flowered, deep fiery orange variety shading to clear yellow at the centre. It is the result of a cross between the varieties 'His Majesty' and 'Tangerine.'

The awards recommended to Gladioli on trial at Wisley were confirmed.

Selected for trial at Wisley.

Aster 'Bodger's Californian Giant Strain' from Messrs. Engelmann, Saffron Walden.

Gladiolus 'Langport Triumph' from Messrs. Kelway, Langport.

Phlox 'Amami' from Messrs. Fairbairn, Carlisle.

The following Dahlias were selected by the Joint Dahlia Committee :—

From Messrs. Cheal, Crawley :

' Lowfield Maroon ' (Camellia fld.), ' Mermaid ' (Min. Pæony), ' Red Rover ' (Camellia fld.).

From Messrs. Stredwick, St. Leonards-on-Sea :

' Golden Rod ' (Cactus), ' Marmot ' (Min. Pæony), ' Mrs. C. Hancock ' (Cactus), ' Nanette ' (Dec.), ' Saxon ' (Cactus), ' Steadfast ' (Cactus).

Other Exhibits.

Messrs. Allwood, Haywards Heath : *Dianthus Allwoodii* ' Molly.'

Mr. F. Lomas, Old Chilwell : *Statice latifolia* ' Chilwell ' variety.

The Rt. Rev. the Hon. B. J. Plunket, Clontarf : *Lobelia fulgens* ' The Bishop.'

Messrs. Redgrove, Boro' Green : *Veronica longifolia Michauxii*.

Mr. C. Turner, Slough : Dahlias.

Mrs. Park Yates, Birkenhead : Dahlia ' Opportunity.'

Section B.

Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and ten other members present.

Awards Recommended :—

Gold Medal.

To Mr. Amos Perry, Enfield, for Aquatics.

Banksian Medal.

To Messrs. Gill, Falmouth, for flowering shrubs and lilies.

To Messrs. Russell, Richmond, for Clematis

To Mr. F. G. Wood, Ashted, for rock plants.

Other Exhibits.

Lady Aberconway and the Hon. H. D. McLaren, Bodnant : varieties of *Eucryphia pinnatifolia*.

Messrs. Burkwood, Kingston : *Ceanothus Burkwoodii*.

H. H. Cook, Esq., Reading : *Helenium pumilum*, virescent form.

Misses Hopkins, Coulsdon : rock plants.

Messrs. Keep, Enfield : rock plants.

FLORAL COMMITTEE, SEPTEMBER 13, 1927.

Section A.

Mr. H. B. MAY, V.M.H., in the Chair, and fifteen other members present.

Awards Recommended :—

Silver Banksian Medal.

To Messrs. Bath, Wisbech, for Gladioli.

To Messrs. Engelmann, Saffron Walden, for Asters.

To Messrs. Engelmann, Saffron Walden, for Carnations.

To Messrs. Kelway, Langport, for Gladioli and Delphiniums.

To Mr. J. H. Pemberton, Havering, for Roses.

Banksian Medal.

To Messrs. Allwood, Haywards Heath, for Carnations.

To Messrs. Cheal, Crawley, for Pentstemons.

To Messrs. House, Bristol, for Scabious and Kniphofias.

To Messrs. Prichard, Christchurch, for herbaceous plants.

Award of Merit.

To Chrysanthemum ' Mayford Bronze ' (votes unanimous), from Mr. H. Shoesmith, Jun., Mayford, Woking. A very neat, bright golden-bronze decorative variety suitable for the garden and for cutting.

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To Chrysanthemum 'Pearla' (votes unanimous), from Messrs. Cragg, Harrison & Cragg, Heston. A large, pale pink incurved variety suitable for cutting.

To *Scabiosa caucasica Goldingensis* (votes unanimous), from Mr. J. Golding, Fordham. A useful addition to these hardy border plants. It is also a splendid plant for cutting, being very free flowering over a long period and vigorous. The large, deep purple-blue flowers are borne on long stiff stems and last well when cut.

The awards recommended to Dahlias on trial at Wisley were confirmed.

Other Exhibits.

Messrs. Barr, Taplow : Asters.

Cheadle Royal Mental Hospital, Cheadle : *Coleus* 'Allan Falconer.'

Mr. H. Hemsley, Crawley : *Sidalceas*.

Mr. J. J. Kettle, Corfe Mullen : Violets.

Messrs. Lowe & Gibson, Crawley Down : herbaceous plants.

Mr. G. E. Sayer, London : *Pelargoniums*.

The John Innes Horticultural Institution, Merton : bicolor, tricolor and variegated *Pelargoniums*.

Mrs. Thornley, Devizes : *Cynoglossum* 'Fairy Blue.'

Mr. F. G. Wood, Ashted : herbaceous plants.

Mr. H. Woolman, Birmingham : *Chrysanthemums*.

Section B.

Mr. G. W. E. LODER, F.L.S., in the Chair, and eleven other members present.

Awards Recommended :—

Banksian Medal.

To Messrs. Russell, Richmond, for *Clematis*.

To Mr. F. G. Wood, Ashted, for rock plants.

Cultural Commendation.

To Major F. H. Fetherstonhaugh, Windsor, for *Hydrangea paniculata*.

Other Exhibits.

Misses Hopkins, Coulsdon : rock plants.

A. Worsley, Esq., Isleworth : *Brunsdonna* × *Parkeri*.

DAHLIA SHOW, SEPTEMBER 14, 1927.

The following Dahlias were selected by the Joint Committee for trial at Wisley :—

From Messrs. Ballego, Leiden, Holland :

'Apoldro' (Single), 'White King' (Dec.).

From Messrs. Bruidegom, Baarn, Holland :

'Delicata' (Cactus).

From Messrs. Burrell, Cambridge :

'Ella' (Charm).

From Messrs. Cheal, Crawley :

'Topaz' (small Dec.).

From Messrs. Ludwig, Hillegom, Holland :

'Mevrouw Ludwig' (Dec.).

Messrs. Nagels, Antwerp :

'Nagels Ideal' (Dec.), 'President Emile Draps' (Dec.).

From Messrs. Stredwick, St. Leonards-on-Sea :

'Buccaneer' (Cactus), 'Canberra' (Dec.), 'Grace Curling' (Dec.),

'Nora Phillips' (Dec.), 'Rover' (Dec.), 'Wee-Wee' (Min. Dec.).

From Messrs. Topsvoort, Aalsmeer, Holland :

'Edgehem' (Cactus), 'Topsvoort' (Dec.).

From Messrs. van der Schoot, Hillegom, Holland :

'Ludwig' (Toma).

From Messrs. Weyers, Hillegom, Holland :

'Kapt. Lindbergh' (Dec.).

Dahlias were also submitted by the following :—

Messrs. Berghuis, Beverwijk, Holland.
 Mrs. H. Broughton, Englefield Green.
 F. Burton, Esq., Hildenborough, Kent.
 Messrs. Carlée, Heemstede, Holland.
 A. J. Cobb, Esq., Reading.
 Messrs. Hornsveld, Baarn, Holland.
 Messrs. Kroon, Baarn, Holland.
 Messrs. Majoor, Baarn, Holland.
 Mr. C. Turner, Slough.
 Mr. H. van Kattendijke, Brummen, Holland.
 Messrs. van Waveren, Hillegom, Holland.
 Mrs. T. Wright, Windsor Forest.

FLORAL COMMITTEE, SEPTEMBER 28, 1927.

AT HOLLAND PARK SKATING RINK.

Section A.

Mr. J. F. McLEOD in the Chair, and twenty-one other members present.

Awards Recommended :—

Award of Merit.

To Canna 'Sweetheart' (votes unanimous), from Hon. Vicary Gibbs (gr. Mr. E. Beckett), Elstree. A very pleasing variety with large, salmon flowers tinted with rose. This variety is one of a series raised by Messrs. Howard & Smith, Los Angeles, California.

To Chrysanthemum 'Daffodil' (votes 11 for, 5 against), from Mr. H. Shoesmith, Jun., Mayford, Woking. A very useful outdoor market variety with neat, bright yellow incurved flowers on good stems.

To Chrysanthemum 'Gloria' (votes unanimous), from Messrs. Cragg, Harrison & Cragg, Heston. A good, golden-yellow market decorative variety with reflexing pointed florets. It is a sport from the variety 'September Glory.'

To Chrysanthemum 'Glow' (votes 11 for, 5 against), from Mr. H. Shoesmith, Jun., Mayford, Woking. A chestnut-red decorative variety with a gold reverse.

To Chrysanthemum 'Jack Robbins' (votes 12 for, 4 against), from Mr. H. Woolman, Birmingham. A good early market decorative variety of a deep apricot colour suffused with bronze.

Selected for trial at Wisley.

Aster 'Empress of Colwall' from Mr. E. Ball, Colwall.

Aster 'Sonia' from Mr. T. Bones, Chesham.

Kniphofias 'Cardinal,' 'Fireflame,' 'Yellow King' from Messrs. Lubbe, Oegstgeest, Holland.

The following Dahlias were selected by the Joint Dahlia Committee :—

H. L. Brousson, Esq., Blackheath :

'Dorothy Brousson' (small Cactus).

Messrs. Cheal, Crawley :

'Little Marvel' (Pom.), 'Rye Star' (Star).

A. J. Cobb, Esq., Reading :

'Mrs. A. S. Galt' (Min. Pæony), 'Mrs. H. R. Beeton' (Pæony),

'Zulu' (giant Single).

Mr. P. Majoor, Baarn, Holland :

'Columbia' (Dec.), 'Miss G. Kenkel' (Dec.).

Mr. J. Mattock, Headington, Oxford :

'Polly' (Charm).

Messrs. Treseder, Cardiff :

'Mrs. Kenneth Webb' (Charm), 'The Bishop of Llandaff' (Charm).

Mr. C. Turner, Slough :

'Ethelwulf' (Star), 'Jean' (Min. Pæony).

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Other Exhibits.

Messrs. Allwood, Haywards Heath : Carnations ' Harmony,' ' Ivory,' ' Maud Allwood ' and varieties of *Dianthus Allwoodii*.

Messrs. Blackmore & Langdon, Bath : *Begonia semperflorens* ' Enchantress ' and ' Fire Sea.'

Mr. R. V. Coffey, Rawdon : *Coleus* seedling.

Messrs. S. Low, Enfield : Carnations ' Happidais,' ' Melchet Beauty,' ' Queen Mary.'

Mr. R. McConnachie, Glasgow : Dahlias.

G. M. Tylden Wright, Esq., Windsor Forest : Dahlia ' Mrs. M. E. Tylden Wright.'

Section B.

Mr. G. W. E. LODER, F.L.S., in the Chair, and fifteen other members present.

Awards Recommended :—

Award of Merit.

To *Aphelandra squarrosa Leopoldii* (votes unanimous), from Messrs. L. R. Russell, Ltd., Richmond. This is a stove plant of erect habit. The decussate leaves are rich green, evenly striped with creamy white, and the terminal flower-spike is thickly set with conspicuous yellow bracts.

To *Bertolonia sericea cristata* (votes unanimous), from Messrs. Russell. A stove plant with large, ovate, undulate leaves of rich green, heavily suffused with red and veined and spotted with silver.

To *Fremontia mexicana* (votes unanimous), from Mr. T. Hay, Hyde Park, and Mr. R. C. Notcutt, Woodbridge. A handsome, half-hardy shrub with downy, grey-green leaves and stems and large, pale yellow flowers which are freely produced. The flowering sprays shown were cut from plants only six months old from seed.

To *Gaultheria Forrestii* (votes unanimous), from Messrs. R. Veitch & Son, Exeter. An evergreen, low-growing shrub with stiff, ovate-lanceolate leaves and axillary clusters of rather inconspicuous bluish fruits.

To *Gentiana Pneumonanthe* (votes 12 for, 1 against), from Col. Stephenson Clarke, Cuckfield. This is a British species of somewhat local occurrence. It is an erect, slender plant about one foot in height and bears a few rather narrow, deep blue flowers in the upper leaf-axils.

Other Exhibits.

Mrs. Walter Jones, Cowrie : *Lilium* hybrid.

Messrs. Veitch, Exeter : *Arbutus Unedo rubra*, *Zauchneria californica splendens*, *Punica granatum nanum*.

Messrs. Waterer, Sons & Crisp, Bagshot : *Berberis* ' Unique.'

FLORAL COMMITTEE, OCTOBER 18, 1927.

Section A.

Mr. H. B. MAY, V.M.H., in the Chair, and seventeen other members present.

Awards Recommended :—

Silver-gilt Banksian Medal.

To Messrs Dobbie, Edinburgh, for Dahlias.

To Messrs. S. Low, Enfield, for Carnations.

To Messrs. Luxford, Sawbridgeworth, for Chrysanthemums.

To Mr. G. Prince, Oxford, for Roses.

Silver Banksian Medal.

To Messrs. Allwood, Haywards Heath, for Carnations.

To Messrs. Barr, Taplow, for Asters.

To Mr. T. Bones, Cheshunt, for Asters.

To Messrs. House, Bristol, for Scabious and Kniphofias.
 To Messrs. Ladhams, Southampton, for herbaceous plants.
 To Mr. J. H. Pemberton, Havering, for Roses.
 To Messrs. Prior, Colchester, for Roses.
 To Messrs. Russell, Richmond, for stove plants.
 To Mr. A. G. Vinten, Balcombe, for Chrysanthemums.
 To the Duke of Wellington, Basingstoke, for Nerines, etc.
 To Mr. J. T. West, Brentwood, for Dahlias.
 To Mr. Vandell, Maidenhead, for Chrysanthemums.

Banksian Medal.

To Messrs. Baker, Codsall, for herbaceous plants.
 To Mr. E. Ballard, Colwall, for Asters.
 To Messrs. Engelmann, Saffron Walden, for Carnations.
 To Mr. J. J. Kettle, Corfe Mullen, for Violets.
 To Messrs. Reamsbottom, West Drayton, for Anemones.
 To Mr. F. G. Wood, Ashted, for herbaceous plants.

Award of Merit.

To Chrysanthemum 'Mrs. F. C. Maples' (votes 14 for), from Mr. E. H. Pearce, Basingstoke. A large Japanese exhibition variety with broad deep yellow florets.

To Chrysanthemum 'Pinkest' (votes unanimous), from Mr. H. Shoesmith, Jun., Mayford, Woking. A small, neat mauve-pink decorative variety suitable for cutting and market work. The florets are stiff and slightly rolled.

To Nerine 'Wales' (votes unanimous), from the Director, R.H.S. Gardens, Wisley. This variety was sent to the trials by the late Rev. J. Jacob, who raised it. It bears compact umbels of large, rich orange-red flowers, the petals of which are $1\frac{1}{2}$ in. long by $\frac{3}{8}$ in. wide and have the tips reflexed. The plant is about 16 ins. high.

Selected for trial at Wisley.

Aster 'Silver Spray,' from Mr. E. Ballard, Colwall.

Other Exhibits.

Messrs. B. Cant, Colchester : Roses.
 Messrs. Carter, Raynes Park : Petunia 'Carter's Pink Empress.'
 Messrs. Cragg, Harrison & Cragg, Heston : Chrysanthemum 'Cheerful.'
 Mr. J. J. Kettle, Corfe Mullen : Violets 'Steel Blue' and 'Lobelia.'
 Messrs. Lowe & Shawyer, Uxbridge : Chrysanthemum 'Bronze Queen.'
 Messrs. Rich & Cooling : Roses and Dahlias.
 Messrs. Wood, Taplow : Asters.

Section B.

Mr. G. W. E. LODER, F.L.S., in the Chair, and twelve other members present.

Awards Recommended :—

Silver-gilt Banksian Medal.

To Messrs. Cheal, Crawley, for shrubs.

Silver Banksian Medal.

To Messrs. Veitch, Exeter, for shrubs.

Banksian Medal.

To Mr. F. G. Wood, Ashted, for alpine plants.

Award of Merit.

To *Halimium libanotis* var. *latifolium* (votes 10 for, 2 against), from Sir Oscar Warburg, Epsom. This award was made, subject to correct naming, on June 15, 1926, when the plant was shown as *H. libanotis*. The present plant differs from the type in its wider foliage.

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Other Exhibits.

The Hon. Vicary Gibbs, Elstree : *Cotoneaster aldenhamensis*.
The Misses Hopkins, Coulsdon : rock garden.
The Director, R.B.G., Kew : Sempervivums.
Sir Wm. Lawrence, Bt., Burford : *Triptilion cordifolia*.
C. G. A. Nix, Esq., Crawley : *Guevina avellana*.
Messrs. Waterer, Sons & Crisp, Bagshot : *Cotoneaster Watereri*.
H. T. Weeks, Esq., Tunbridge Wells : Sempervivums.

FLORAL COMMITTEE, NOVEMBER 1, 1927.

Section A.

Mr. H. B. MAY, V.M.H., in the Chair, and fifteen other members present.

Awards Recommended :—

Silver Banksian Medal.

To Messrs. Allwood, Haywards Heath, for Carnations.
To The Kings Acre Nurseries, Hereford, for Chrysanthemums.
To Mr. J. H. Pemberton, Havering, for Roses.

Banksian Medal.

To Messrs. Engelmann, Saffron Walden, for Carnations.
To Messrs. House, Bristol, for Scabious and other herbaceous plants.
To Mr. J. J. Kettle, Corfe Mullen, for Violets.
To Messrs. Luxford, Sawbridgeworth, for Chrysanthemums.
To Messrs. Prior, Colchester, for Roses.

Award of Merit.

To Chrysanthemum 'Daphne' (votes unanimous), from Mr. H. Shoesmith, Jun., Mayford, Woking. A large single variety with several rows of rosy-mauve florets. It is suitable for cutting and market work.

To Chrysanthemum 'Pax' (votes unanimous), from Mr. H. Shoesmith, Jun., Mayford, Woking. A neat and useful decorative variety with round flowers of good substance. The stout florets are white, but towards the centre of the flower they are tinted with cream. A suitable variety for cutting and market work.

Other Exhibits.

Mr. J. Dilly, Harrow-on-the-Hill : Chrysanthemums.
Mr. A. D. Hickley, Exmouth : seedling Chrysanthemums.
Mr. J. J. Kettle, Corfe Mullen : Violets 'Lobelia' and 'Countess of Shaftesbury'.
Hon. Mrs. G. Lyttelton, Eton : Chrysanthemums.
Mr. B. Pinney, Shipbourne : Violets.
Messrs. Reamsbottom, West Drayton : Anemones.
Mr. F. Rich, Worcester : Violets.
The Director, R.H.S. Gardens, Wisley : *Nerine Bowdenii gigantea*, *N. Mansellii*, *N. 'Rohais'*.

Section B.

Mr. G. W. E. LODER, F.L.S., in the Chair, sixteen other members, the Hon. VICARY GIBBS, V.M.H., and Mr. A. W. EXELL, M.A., F.L.S. (visitors), present.

Awards Recommended :—

Silver Banksian Medal.

To Mr. Amos Perry, Enfield, for Lilies and alpine plants.

Banksian Medal.

To Messrs. Russell, Richmond, for shrubs.
To Mr. F. G. Wood, Ashted, for alpine plants.

Award of Merit.

To *Cotoneaster aldenhamensis* (votes 10 for, 3 against), from the Hon. Vicary Gibbs, Elstree. This is a handsome Cotoneaster of vigorous and spreading growth. It has lanceolate leaves with shining, rugose surface, dark green above and paler beneath. The specimens shown were heavily laden with dense clusters of bright red berries.

To *Crinum zeylanicum* (votes unanimous), from Sir Wm. Lawrence, Bt., Burford. A handsome species of robust habit. The specimen shown carried two stout scapes. The flowers are white, with a broad longitudinal red band on the outside of each segment.

To *Eucalyptus leucoxylon* (votes 11 for, 1 against), from Commendatore Cecil Hanbury, M.P., F.L.S., La Mortola. A very beautiful species, of which several large flowering branches were shown. The leaves are long and narrowly lanceolate, dull dark green, bearing in their axils three-flowered clusters of large, pale rose-coloured blossoms. The colour scheme is completed by the bright purple of the upper sides of the young growths.

To *Euonymus grandiflorus* (votes 7 for, 3 against), from Sir Charles Cave, Bt., Sidmouth. An uncommon Spindle-tree, introduced from Nepal a century ago. The flowers are white, larger than those of most other species, and are followed by large, purple-tinted fruits. The bright green leaves are broadly lanceolate.

Other Exhibits.

University Botanic Gardens, Cambridge : *Garrya elliptica*.

Lt.-Col. S. R. Clarke, Cuckfield : *Gentiana Burgeri*, *Haemanthus sp.*

The Hon. Vicary Gibbs, Elstree : Cotoneasters.

The Misses Hopkins, Coulsdon : rock plants.

Mr. J. J. Klinkert, Richmond : clipped trees.

Mr. R. C. Notcutt, Woodbridge : Cotoneaster seedling.

Messrs. Waterer, Sons & Crisp, Bagshot : *Cotoneaster Watereri*.

FLORAL COMMITTEE, NOVEMBER 15, 1927.

Section A.

Mr. H. B. MAY, V.M.H., in the Chair, and nineteen other members present.

Awards Recommended :—*Gold Medal.*

To Mr. H. J. Jones, Lewisham, for Chrysanthemums.

Silver-gilt Banksian Medal.

To Mrs. Sofer Whitburn (gr. Mr. A. S. Gooden), Andover, for Begonias.

Silver Banksian Medal.

To Mrs. Urban H. Broughton (gr. Mr. W. A. Evans), Englefield Green, for Chrysanthemums.

To Mr. J. J. Kettle, Corfe Mullen, for Violets.

To Messrs. S. Low, Enfield, for Carnations.

To Messrs. Luxford, Sawbridgeworth, for Chrysanthemums.

To Mr. A. G. Vinten, Balcombe, for Chrysanthemums.

Banksian Medal.

To Messrs. Allwood, Haywards Heath, for Carnations.

To Napsbury Mental Hospital, St. Albans, for Chrysanthemums.

To Mr. W. Yandell, Maidenhead, for Chrysanthemums.

Award of Merit.

To Carnation 'Cattleya Mauve' (votes unanimous), from Messrs. Allwood, Haywards Heath. A large, fragrant rosy-mauve perpetual flowering Carnation of excellent form suitable for market and cutting. The distinct colour is well described by the name and although pleasing in daylight it is seen at its best under artificial light. For this reason the variety will probably become a favourite for decorative work.

To Carnation 'Maud Allwood' (votes 10 for, 5 against), from Messrs. Allwood, Haywards Heath. Another distinct perpetual flowering variety for cutting and market. The flowers are smaller than those of the foregoing but of excellent form

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and of a bright reddish-orange shade particularly welcome in the dark days of winter.

To Chrysanthemum 'Enid' (votes 13 for, 2 against), from Mr. H. Shoesmith, Jun., Mayford, Woking. A handsome, bright chestnut-terra-cotta single variety with a yellow zone round the eye. It is suitable for exhibition or cutting.

To Chrysanthemum 'Mrs. E. H. Pearce' (votes unanimous), from Mr. E. H. Pearce, Basingstoke. A large Japanese exhibition variety with broad loosely incurving florets. Its colour is ivory-white tinted with green.

To Chrysanthemum 'Mrs. Elsie Crook' (votes 17 for), from Mr. G. Carpenter, Byfleet. A large, deep cream single variety with broad florets reflexing at the tips. It is suitable for cutting and for exhibition.

Other Exhibits.

A. G. Bendir, Esq., Marlow : Chrysanthemum 'Molly's Delight.'

Lady Adelaide Colville, Forest Row : Chrysanthemum 'Pixtonian.'

Messrs. Engelmann, Saffron Walden : Carnations.

Mr. A. D. Hickley, Exmouth : Chrysanthemum 'Ruddigore.'

Messrs. House, Westbury-on-Trym : Scabious and Kniphofias.

Mr. W. W. Martin, St. Austell : Chrysanthemum 'Mr. Walter Martin.'

G. Mayer, Esq., Woldingham : Chrysanthemums.

Mr. B. Pinney, Shipbourne : Violets.

J. Scott, Esq., Balham : Chrysanthemum 'Vin Rouge.'

The Director, R.H.S. Gardens, Wisley : Nerines 'Brocade' and 'Glamour' from the trials.

H. W. Warner, Esq., Henfield : Chrysanthemum 'Kentwyns Kermis.'

D. B. Wilkinson, Esq., Chertsey : Chrysanthemum 'Silverlands Yellow.'

Section B.

Mr. G. W. E. LODER, F.L.S., in the Chair, twenty other members, and Sir HERBERT MAXWELL, Bt. (visitor), present.

Awards Recommended :—

Gold Medal.

To the Hon. Vicary Gibbs, Elstree, for shrubs.

Silver-gilt Banksian Medal.

To Mr. G. Reuthe, Keston, for conifers.

Silver Banksian Medal.

To Miss G. Howse, Golders Green, for miniature shrubs.

Banksian Medal.

To Messrs. Russell, Richmond, for shrubs.

To Mr. G. G. Whitelegg, Chislehurst, for shrubs and alpine plants.

To Mr. F. G. Wood, Ashted, for shrubs and alpine plants.

Award of Merit.

To *Acacia podalyriaefolia* (shown as *A. Cunninghamii*) (votes unanimous), from Lionel de Rothschild, Esq., Exbury. A most lovely Australian species of rapid and vigorous growth, but unfortunately not sufficiently hardy to succeed in the open. The leaves are ovate, acute, one to two inches long, and, like the stems, covered with fine, silvery hairs. The sweetly-scented, bright yellow flowers are freely produced in long axillary racemes.

Other Exhibits.

Mr. and Mrs. G. W. W. Blathwayt, West Porlock : *Tacsonia quitensis*, *Acacia falcata*.

The Hon. Vicary Gibbs, Elstree : *Rhamnus leptophylla*.

The Misses Hopkins, Coulsdon : alpine plants.

Messrs. House & Son, Westbury : *Aster grandiflorus*.

Mr. J. J. Klinkert, Richmond : clipped trees.

Sir Wm. Lawrence, Bt., Burford : *Iris Vartani*.

Messrs. Watson, Killiney : *Griselinia littoralis* var. *variegata*.

Wm. van de Weyer, Esq., Dorchester : *Lilium primulinum*.

Ingham-Whitaker, Esq., Lymington : *Feijoa Sellowiana*.

FLORAL COMMITTEE, NOVEMBER 29, 1927.

Section A.

Mr. H. B. MAY, V.M.H., in the Chair, and seventeen other members present.

Awards Recommended :—*Silver-gilt Banksian Medal.*

To Messrs. Luxford, Sawbridgeworth, for Chrysanthemums.

To Baron Bruno Schröder (gr. Mr. E. J. Henderson), Englefield Green, for Begonias.

To Messrs. Sutton, Reading, for Chrysanthemums.

Silver Banksian Medal.

To Messrs. Allwood, Haywards Heath, for Carnations and Dianthus Allwoodii.

To Messrs. S. Low, Enfield, for Carnations.

To Mr. A. Shambrook, Aylesbury, for Cyclamen.

To Mr. A. G. Vinten, Balcombe, for Chrysanthemums.

Banksian Medal.

To Messrs. Engelmann, Saffron Walden, for Carnations.

To Mr. J. J. Kettle, Corfe Mullen, for Violets.

To H. C. Walrond, Esq. (gr. Mr. D. Mitchell), Cheshunt, for Carnations.

To Messrs. Wells, Merstham, for Chrysanthemums.

Award of Merit.

To Carnation 'Canadian Pink' (votes 19 for), from Messrs. Allwood, Haywards Heath. A perpetual flowering variety raised by the Dale Estate Company, Toronto, Canada. A good pink Carnation for cutting and market work. The well-formed flowers are borne on long stems. The petals are lightly serrated.

To Carnation 'Melchet Beauty' (votes unanimous), from Messrs. S. Low, Enfield. A heliotrope perpetual flowering variety heavily splashed with deep vermilion and having the petals fringed. It is a useful Carnation for cutting and market work.

To Carnation 'Wivelsfield Claret Improved' (votes 11 for, 4 against), from Messrs. Allwood, Haywards Heath. A good claret coloured perpetual flowering variety suitable for market. In habit of growth and size of flower it is an improvement on 'Wivelsfield Claret.'

To Chrysanthemum 'Gaiety' (votes unanimous), from Mr. H. Shoesmith, Jun., Woking. A large, single variety of excellent form with several rows of florets. The colour is crimson-chestnut with a narrow golden zone round the small disc. It is recommended for cutting and market work.

To Chrysanthemum 'Mrs. E. Page' (votes 15 for), from Mr. H. Woolman, Birmingham. A large, single variety with several rows of golden yellow florets shaded with chestnut towards the tips. It is suitable for cutting and market.

To Chrysanthemum 'Tom Abbot' (votes unanimous), from Mr. H. J. Jones, Lewisham. A very large Japanese exhibition variety with long, broad, pointed bright canary-yellow florets.

Other Exhibits.

Mr. G. Carpenter, Byfleet : Chrysanthemums, and Carnation 'L. L. Taylor.'

W. H. Cottingham, Esq., Maidenhead : Chrysanthemum 'Peggy Steuner.'

Major E. David, Fairwater : Chrysanthemum 'Mrs. F. Howells.'

Mrs. Alan Freemantle, Penn : Helichrysum 'Greenways Strain.'

Section B.

Mr. G. W. E. LODER, F.L.S., in the Chair, and fifteen other members present.

Awards Recommended :—*Banksian Medal.*

To Messrs. Russell, Richmond, for shrubs.

To Mr. F. G. Wood, Ashted, for shrubs and alpine plants.

To Messrs. Wm. Wood, Taplow, for shrubs.

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Cultural Commendation.

To Sir Wm. Lawrence, Bt., Burford, for *Protea mellifera*. The Proteas were once favourite stove plants but are seldom seen nowadays outside botanic gardens. *P. mellifera* was figured at t. 346 of the Bot. Mag. as long ago as 1796. The flower-heads of this species are large, the inner bracts being about four inches long, white, flushed green and tipped with rose. The leaves are narrow oblanceolate, pale greyish-green and placed edgewise.

Other Exhibits.

The Hon. Vicary Gibbs, Elstree : Cotoneasters.
The Misses Hopkins, Coulsdon : rock plants.
Mr. Klinkert, Richmond : clipped trees.
Sir Wm. Lawrence, Bt., Burford : *Buddleia madagascarensis*.

FLORAL COMMITTEE, DECEMBER 13, 1927.

Section A.

Mr. H. B. MAY, V.M.H., in the Chair, and fourteen other members present.

Awards Recommended :—

Silver-gilt Banksian Medal.

To Mr. A. G. Vinten, Balcombe, for Chrysanthemums.

Banksian Medal.

To Messrs. Allwood, Haywards Heath, for Carnations.
To Messrs. Engelmann, Saffron Walden, for Carnations.
To Mr. J. J. Kettle, Corfe Mullen, for Violets.
To Messrs. L. R. Russell, Richmond, for Begonias and other greenhouse plants.

Other Exhibits.

Mr. G. Carpenter, Byfleet : Carnation ' Charming.'
Mrs. Freemantle, Penn : Helichrysums.
Mr. P. E. Hulse, Shoreham : Chrysanthemum ' Yellow Star.'
Messrs. S. Low, Enfield : Carnations.
Mr. H. Shoesmith, Jun., Mayford : Chrysanthemum ' Winsome.'

Section B.

Mr. G. W. E. LODER, F.L.S., in the Chair, and fifteen other members present.

Awards Recommended :—

Silver Banksian Medal.

To Messrs. Wm. Wood & Son, Ltd., Taplow, for shrubs.

Banksian Medal.

To Miss G. Howse, Golders Green, for miniature shrubs.
To Mr. F. G. Wood, Ashted, for shrubs.

Award of Merit.

To *Polystichum angulare flabellipinnulum* (votes 8 for), from W. B. Cranfield, Esq., Enfield Chase. This is a very distinct variety of *P. angulare* which was found growing wild in Dorset in 1878. The fronds are about eighteen inches long, the pinnæ 3½ inches long, and the pinnules fan-shaped, overlapping, finely divided and with bristly-serrate margins.

Other Exhibits.

The Misses Hopkins, Coulsdon : rock plants.
Mr. J. J. Klinkert, Richmond : clipped shrubs.

ORCHID COMMITTEE.

JULY 5, 1927.

Sir JEREMIAH COLMAN, Bt., in the Chair, and eleven other members present.

Awards Recommended :—*Bronze Banksian Medal.*

To Messrs. Sanders, St. Albans, for species and hybrids.

To Messrs. Charlesworth, Haywards Heath, for hybrids.

Award of Merit.

To *Miltonia* × *gallonensis* var. 'Albatross' (*Bleuana* × *Charlesworthii*) (votes unanimous), from Messrs. Charlesworth. Flowers much above the average size, white, except for a light rose stain on the base of each petal, and a dull yellow mask on the base of the labellum.

Vote of Thanks.

To Mr. Amos Perry, Enfield, for *Cypripedium californicum*, with a spike of five small white flowers.

Other Exhibits.

Messrs. Stuart Low, Jarvis Brook, Sussex: *Laeliocattleya* × 'Aphrodite' and a well-grown plant of *Cattleya Warscewiczii*, with five flowers on the spike.

Messrs. H. G. Alexander, Westonbirt, Tetbury: *Laeliocattleya* × 'Queen Mary' var. *fulgens*, of deep rosy-mauve colour.

Messrs. Black & Flory, Slough: *Miltonia* × 'Kennie,' with heavily spotted labellum.

ORCHID COMMITTEE, JULY 19, 1927.

Sir JEREMIAH COLMAN, Bt., in the Chair, and eleven other members present.

Awards Recommended :—*Bronze Banksian Medal.*

To Messrs. Charlesworth, Haywards Heath, Sussex, for species and hybrids.

Award of Merit.

To *Disa* × 'Italia' var. 'Pink Domino' (*Blackii* × *grandiflora*) (votes 10 for, 3 against), from Col. Stephenson R. Clarke, C.B., Borde Hill, Cuckfield, Sussex. Flowers resemble those of *D. grandiflora* in form, but the lateral sepals are deep rose-pink.

Other Exhibits.

Messrs. H. G. Alexander, Tetbury, Glos.: *Laeliocattleya* × *lustrissima superba* and *Cattleya* × 'Hesperus.'

ORCHID COMMITTEE, AUGUST 3, 1927.

FREDERICK J. HANBURY, Esq., in the Chair, and eleven other members present.

Awards Recommended :—*Bronze Banksian Medal.*

To Messrs. Black & Flory, Slough, for group of *Cattleya* hybrids.

Award of Merit.

To *Odontioda* × 'Leonardo da Vinci' (parentage unknown) (votes unanimous) from J. J. Bolton, Esq., Claygate, Surrey. Spike of twelve flowers of medium size, reddish-purple flushed with crimson, lip flecked with reddish-purple.

CXVI PROCEEDINGS OF THE ROYAL HORTICULTURAL SOCIETY.

To *Odontioda* × *majestica* (*Oda.* × 'Coronation' × *Odm.* × *majesticum*) (votes unanimous), from J. J. Bolton, Esq. Spike of fourteen flowers, with bold reddish-scarlet blotching, lip large, broad at the apex, and with a red band around the yellow crest.

To *Laeliocattleya* × 'Profusion' var. 'Alaric' (*L.-c.* × 'Serbia' × *C. Hardyana*) (votes unanimous), from Messrs. McBean, Cooksbridge, Sussex. Spike bore five large flowers of rosy-mauve colour, the wide labellum rich purple with a cream disc on each side lobe.

Cultural Commendation.

To Mr. S. Lyne, Orchid grower to J. J. Bolton, Esq., Claygate, Surrey, for exhibit of well-flowered *Odontoglossums* and *Odontiodas*.

Other Exhibits.

Messrs. McBean: *Laeliocattleya* × 'Profusion' and *Cattleya* × *Hardyana*.

Messrs. Stuart Low, Jarvis Brook, Sussex: *Laeliocattleyas* and *Cattleya* × *Dupreana*.

ORCHID COMMITTEE, AUGUST 16, 1927.

C. J. LUCAS, Esq., in the Chair, and ten other members present.

Awards Recommended:—

Silver Banksian Medal.

To Messrs. Sanders, St. Albans, for Orchid species.

To Messrs. Charlesworth, Haywards Heath, Sussex, for hybrids.

Award of Merit.

To *Cypripedium* × 'Hiraethlyn' (*Godefroyae* × 'Blanchette') (votes unanimous), from Lady Aberconway and the Hon. H. D. McLaren, Bodnant, North Wales. A round flower of porcelain-white with minute maroon spotting.

To *Odontoglossum grande* var. 'Oddity' (votes unanimous), from Messrs. Sanders, St. Albans. A peloric flower in which the two petals take the form of the labellum.

ORCHID COMMITTEE, AUGUST 30, 1927.

Sir JEREMIAH COLMAN, Bt., in the Chair, and six other members present.

Awards Recommended:—

First-class Certificate.

To *Laeliocattleya* × 'Canberra' (*C.* × 'Venus' × *L.-c.* × 'Litana') (votes unanimous), from Messrs. Cowan, Southgate, N. Flower large and golden-orange, the broad petals obscurely veined with a deeper tint. Labellum crimson, bordered with ruby-crimson.

Award of Merit.

To *Laeliocattleya* × 'Mrs. Chamberlain Chanler,' Westonbirt var. (*L.-c.* × 'Lustre' × *L. purpurata*) (votes unanimous), from Messrs. H. G. Alexander, Tetbury, Glos. Flowers of intense purple colour, the petals with a narrow rose-coloured border, the labellum deep crimson.

Vote of Thanks.

To Messrs. Charlesworth, Haywards Heath, for hybrids.

To Messrs. Sanders, St. Albans, for species and hybrids.

To Messrs. Sutton Bros., Hassocks, for various Orchids.

Other Exhibit.

J. J. Bolton, Esq., Claygate, Surrey: *Odontoglossum* × 'Matador,' with large flowers having bold reddish-purple blotching.

ORCHID COMMITTEE, SEPTEMBER 13, 1927.

Sir JEREMIAH COLMAN, Bt., in the Chair, and three other members present.

Awards Recommended :—

Silver Banksian Medal.

To Messrs. Sanders, St. Albans, for uncommon species.

Award of Merit.

To *Cattleya* × 'Horos' ('Heliodor' × 'Sunbeam') from Baron Schröder, Englefield Green, Surrey. Flower of medium size and of rich golden-yellow, the labellum bordered with cerise.

Other Exhibits.

Messrs. McBean, Cooksbridge, Sussex: *Odontioda* × *Cooksoniae*, with a spike of 22 flowers.

Messrs. Sutton Bros., Hassocks: *Laeliocattleya* × 'Woodside,' well-coloured.

ORCHID COMMITTEE, SEPTEMBER 28, 1927.

Sir JEREMIAH COLMAN, Bt., in the Chair, and twelve other members present.

Awards Recommended :—

Silver-gilt Flora Medal.

To Messrs. Stuart Low, Jarvis Brook, Sussex, for species and hybrids.

Award of Merit.

To *Laeliocattleya* × 'Momus,' Low's var. (*C.* × 'Octave Doin' × *L.-c.* × *rubens*) (votes unanimous), from Messrs. Stuart Low, Jarvis Brook, Sussex. Flower of large size, petals broad and flatly displayed, mauve-purple, the labellum much darker.

To *Odontoglossum* × 'Toreador' ('Laurentia' × *crispum*) (votes unanimous), from Messrs. Charlesworth, Haywards Heath. The spike bore seven round flowers of thick texture, the purple colour on the back of the petals only showing through obscurely.

Other Exhibits:

Frank T. Paul, Esq., F.R.C.S., Cloudelee, Caldby, Cheshire: two vigorous plants of *Cypripedium Charlesworthii* var. 'Cloudelee,' somewhat deeper in colour than usually seen.

Messrs. Armstrong & Brown, Tunbridge Wells: *Cattleya* × *amabilis* var. 'Our Queen,' with large white flowers, the labellum bright purple, and *Odontioda* × 'Juno,' with a spike of 57 flowers.

Messrs. Charlesworth, Haywards Heath: *Brassolaeliocattleya* × 'Asmodia,' terra-cotta, and *B.-l.-c.* × 'Mercia,' mauve-pink, the lip bordered with purple.

ORCHID COMMITTEE, OCTOBER 18, 1927.

Sir JEREMIAH COLMAN, Bt., in the Chair, and fourteen other members present.

Awards Recommended :—

Gold Medal.

To Messrs. Charlesworth, Haywards Heath, for a superb group.

To Messrs. McBean, Cooksbridge, Sussex, for group of species and hybrids.

Silver-gilt Banksian Medal.

To Messrs. Sanders, St. Albans, for *Cattleyas* and other hybrids.

To Messrs. Cowan, Southgate, for *Cypripediums* and *Cattleyas*.

To Messrs. Stuart Low, Jarvis Brook, Sussex, for autumn-flowering hybrids.

CXVIII PROCEEDINGS OF THE ROYAL HORTICULTURAL SOCIETY.

Silver Banksian Medal.

To Messrs. Cypher, Cheltenham, for *Cypripediums*.

To Mr. Harry Dixon, Wandsworth Common, for *Odontoglossums* and other hybrids.

Challenge Cup, for the best exhibit by an amateur in a space not exceeding 60 sq. ft.

To J. J. Joicey, Esq., The Hill, Witley, Surrey, for species and hybrids.

Vote of Thanks.

To Sir Jeremiah Colman, Bt., Gatton Park, Surrey, for a non-competitive group containing large specimens of *Cattleya* × *Browniae* and *C. × Bowringiana* var. *lilacina*.

Award of Merit.

To *Cattleya* × 'Aureata' ('*Fabia*' × *aurea*) (votes unanimous), from Messrs. McBean. Flowers of model shape, rich rosy-mauve.

To *Cattleya* × 'Princess Royal' ('*Fabia*' × *Hardyana*) (votes 14 for), from Messrs. McBean. The spike bore three large bright rosy-purple flowers, with darker labellum.

To *Laeliocattleya* × 'Valencia' (*L.-c.* × 'Soulange' × *C.* × 'Dinah') (votes 11 for, 3 against), from Messrs. McBean. Flower of fine shape with rose sepals and petals, and dark purple lip.

To *Laeliocattleya* × 'Mrs. Medo' var. 'The Node' (*C.* × 'Venus' × *L.-c.* × *luminosa aurea*) (votes unanimous), from Mrs. Carl Holmes, The Node, Welwyn, Herts. Flower of thick texture, bronze-yellow, the labellum ruby-crimson.

To *Cypripedium* × *Gowerianum* var. 'Mrs. Leonard Dixon' (*Lawrenceanum* × *Curtisii Sanderæ*) (votes 11 for), from L. Dixon, Esq., Willoughthorpe, Stanstead Abbots. Flower emerald-green, dorsal sepal white with vertical lines of emerald-green.

To *Laeliocattleya* × 'Hilary' (*L.-c.* × 'Soulange' × *C.* × 'Fabia') (votes 12 for), from Messrs. Cowan. A showy flower rosy-mauve, lip mottled dark purple.

To *Cattleya* × 'Fabia' var. 'Queen Elizabeth' (*Dowiana* × *labiata*) (votes 9 for, 3 against), from Messrs. Sanders. Flowers bright rosy-mauve colour, labellum crimson-purple.

Other Exhibits.

Messrs. Black & Flory, Slough: *Brassocattleya* × 'Alderman,' and the Langley variety of *L.-c.* × 'Edzell.'

Messrs. A. J. Keeling, Bradford: *Laeliocattleya* × 'Mrs. Medo' var. 'Brilliant' and *Cypripedium* × 'Eureka.'

Messrs. Sutton Bros., Hassocks: *Cypripedium* × *Rossettii*.

Messrs. H. G. Alexander, Tetbury: *Cattleya* × 'Redstar.'

ORCHID COMMITTEE, NOVEMBER 1, 1927.

Sir JEREMIAH COLMAN, Bt., in the Chair, and twelve other members present.

Awards Recommended:—

Silver-gilt Banksian Medal.

To Messrs. Sanders, St. Albans, for species and hybrids.

To Messrs. H. G. Alexander, Tetbury, for hybrids.

To Messrs. Cowan, Southgate, for *Cypripediums* and *Cattleyas*.

Silver Banksian Medal.

To Messrs. Charlesworth, Haywards Heath, for choice hybrids.

First-class Certificate.

To *Cypripedium* × 'Chardmoore' var. 'Alfred Bridges' ('Lena' × 'Christopher' var. 'Grand Duke Nicholas') (votes unanimous), from Miss A. B. Moore, Chardwar, Bourton-on-the-Water, Glos. An immense flower, with a round dorsal sepal, white, with a few purple spots on the central area, and a greenish base, petals yellowish, with brownish suffusion and reticulation.

To *Laeliocattleya* × 'Sunbelle' var. 'Sunset' (*C.* × 'Thora' × *L.-c.* × 'Serbia') (votes unanimous), from F. J. Hanbury, Esq., Brockhurst, East

Grinstead. A charming flower of model form, rosy-mauve, the labellum round with a golden centre.

Award of Merit.

To *Laeliocattleya* × 'Moloch' (L.-c. × 'St. Gothard' × L.-c. × 'Sargon') (votes 10 for), from Messrs. H. G. Alexander. Flowers of thick texture, bright purple-mauve.

Other Exhibits.

Mr. Harry Dixon, Wandsworth Common : hybrid *Cypripediums*.

Messrs. McBean, Cooksbridge ; *Laeliocattleya* × 'Profusion,' with a spike of six flowers.

ORCHID COMMITTEE, NOVEMBER 15, 1927.

Sir JEREMIAH COLMAN, Bt., in the Chair, and eleven other members present.

Awards Recommended :—

Silver-gilt Banksian Medal.

To S. G. Brown, Esq., Brownlands, Shepperton, Middx., for group of various Orchids.

Silver Banksian Medal.

To Messrs. Cowan, Southgate, for species and hybrids.

To Messrs. Stuart Low & Co., Jarvis Brook, Sussex, for species and hybrids.

To Messrs. Charlesworth, Haywards Heath, for hybrids.

First-class Certificate.

To *Cypripedium* × 'Chardmoore' var. 'Mrs. Cowburn' ('Lena' × 'Christopher') (votes 10 for), from Messrs. Armstrong & Brown, Tunbridge Wells. The dorsal sepal of the flower is 4½ inches in height and width, porcelain-white, light greenish at the base, where there are some radiating greenish lines ; the petals and labellum yellowish with reddish-brown reticulation and shading.

Award of Merit.

To *Brassocattleya* × *Vilmoriniana*, Brockhurst var. (*C. Mossiae* × *B.-c.* × 'Mrs. J. Leemann') (votes 8 for, 4 against), from F. J. Hanbury, Esq., Brockhurst, East Grinstead. A large and showy flower of bright rose colour, the labellum with an orange-coloured centre.

To *Cypripedium* × 'Perseus,' Stonehurst var. ('Alcibiades' × 'Lady Dillon') (votes 8 for), from Robert Paterson, Esq., Stonehurst, Ardingly, Sussex. Flower of model form, the dorsal sepal with vertical lines of dark spotting, the lip mahogany-red.

To *Laeliocattleya* × 'Ishtar' (L.-c. × 'Sargon' × *C.* × 'Fabia') (votes unanimous), from Messrs. H. G. Alexander, Tetbury, Glos. Flowers of thick texture, rosy-mauve, lip crimson.

To *Laeliocattleya* × 'Yukon' var. 'Unique' (L.-c. × *Schneideri* × *C.* × 'Mrs. Pitt') (votes 8 for, 4 against), from Messrs. Sanders, St. Albans. The chief attraction is the vivid cerise of the sepals and petals, the labellum having a bright orange-coloured centre.

Cultural Commendation.

To Mr. F. W. Thurgood, Orchid grower to S. G. Brown, Esq., Brownlands, Shepperton, Middx., for *Lycaete Imschootiana*, with 14 flowers.

Other Exhibits.

Mr. Harry Dixon, Wandsworth Common : various *Cypripedium* hybrids.

Messrs. Sanders, St. Albans : *Cattleya* × 'St. Andre' and *Laeliocattleya* × 'Carmencita.'

Messrs. McBean, Cooksbridge, Sussex : hybrids.

Messrs. Sutton Bros., Hassocks : *Cypripedium* hybrids.

Messrs. Black & Flory, Slough : *Laeliocattleya* × 'Edzell.'

Messrs. Armstrong & Brown, Tunbridge Wells : *Cypripedium* × 'Chrysostom' var. 'Richard Fort.'

CXX PROCEEDINGS OF THE ROYAL HORTICULTURAL SOCIETY.

ORCHID COMMITTEE, NOVEMBER 29, 1927.

Sir JEREMIAH COLMAN, Bt., in the Chair, and twelve other members present.

Awards Recommended :—

Silver Banksian Medal.

To Messrs. Sanders, St. Albans, for species and hybrids.

To Messrs. Stuart Low, Jarvis Brook, Sussex, for various Orchids.

To Messrs. Charlesworth, Haywards Heath, for hybrids.

Bronze Banksian Medal.

To Messrs. Black & Flory, Slough, for Cypripediums.

First-class Certificate.

To *Miltonia* × 'Wm. Pitt,' Dell Park var. ('Isabel Sander' × *Bleuana*) (votes unanimous), from Baron Bruno Schröder, Englefield Green, Surrey. One of the finest of *Miltonia* hybrids, the whole flower being rich velvety-crimson, except at the base of the labellum, where there is a brownish mask with radiating lines extending into a white area.

To *Calanthe* × 'Hexham Lad' var. 'Richard' (*burfordiensis* × 'Angela') (votes 14 for), from Clive Cookson, Esq., Nether Warden, Hexham-on-Tyne. A showy hybrid with flowers of rich ruby-red, the labellum having two pale rose areas near its base.

Award of Merit.

Calanthe × 'Hexham Gem' var. 'Phyllis' ('Angela' × 'Bryan') (votes 8 for, 1 against), from Clive Cookson, Esq. The flowers are large, white, the lip with a crimson blotch at the base.

To *Cymbidium* × 'Lucastes' (*grandiflorum* × 'Warbler') (votes unanimous), from W. J. Burstow, Esq., Old Quarry, Haywards Heath. Flowers large and light greenish in colour, the labellum cream lightly spotted crimson.

To *Odontioda* × 'Pierre Loti' ('Coronation' × 'Royal Gem') (votes 11 for, 1 against), from J. J. Bolton, Esq., Claygate, Surrey. The flowers are bordered with rosy mauve and bear several rose-red spots of various sizes.

Vote of Thanks.

Clive Cookson, Esq., Hexham-on-Tyne, for an interesting exhibit of *Calanthe* hybrids.

Other Exhibits.

Mr. Harry Dixon, Wandsworth Common: cool-growing species and hybrids.

Messrs. Cowan, Southgate: *Cattleya* × 'Mimosa' with golden-yellow sepals and petals.

Messrs. Armstrong & Brown, Tunbridge Wells: *Laeliocattleya* × *Schroederæ*, with a spike of five flowers.

ORCHID COMMITTEE, DECEMBER 13, 1927.

Sir JEREMIAH COLMAN, Bt., in the Chair, and eighteen other members present.

Awards Recommended :—

Gold Medal.

To Miss A. B. Moore, Chardwar, Bourton-on-the-Water, for a superb group of Cypripedium hybrids.

Silver-gilt Banksian Medal.

To Messrs. H. G. Alexander, Tetbury, Glos., for Cypripediums and various Orchids.

To Messrs. Charlesworth, Haywards Heath, for various Orchids.

To Messrs. J. & A. McBean, Cooksbridge, Sussex, for species and hybrids.

To Messrs. Armstrong & Brown, Tunbridge Wells, for Cypripedium hybrids.

To Messrs. Cowan, Southgate, for species and hybrids.

To Messrs. Sanders, St. Albans, for various Orchids.

Silver Banksian Medal.

To Mr. John Evans, Colwyn Bay, for species and hybrids.
To Messrs. Cypher, Cheltenham, for *Cypripedium* hybrids.

Bronze Banksian Medal.

To Ernest R. Ashton, Esq., Broadlands, Camden Park, Tunbridge Wells.
To Mr. Harry Dixon, Wandsworth Common, for species and hybrids.

Vote of Thanks.

To Sir Jeremiah Colman, Bart., Gatton Park, Surrey, for an interesting exhibit of uncommon species.

First-class Certificate.

To *Cypripedium* × 'Windrush' var. 'Memoria G. F. Moore' (*radiosum* × 'Memoria F. M. Ogilvie' var. 'The King') (votes 14 for), from Miss A. B. Moore, Bourton-on-the-Water, Glos. Flower very large, dorsal sepal green at the base, white on the outer margin, and boldly spotted. Petals unusually broad, yellowish, the upper half reddish-brown.

To *Cypripedium* × 'H. T. Pitt' (*Archmanti* × 'Christopher' var. 'Grand Duke Nicholas') (votes 11 for, 5 against), from Miss A. B. Moore. The large dorsal sepal is flat and round in outline, the basal area light yellowish-green, the outer zone white, the petals honey-yellow with much red-brown reticulation.

Award of Merit.

To *Cypripedium* × 'Westminster' ('Chloris' × 'Alcibiades') (unanimous), from Messrs. Black & Flory, Slough. An artistic flower in which the basal half of the dorsal sepal is purplish-brown, the outer zone white, the petals red-brown with a yellow border, the labellum yellow with reddish-brown shading.

To *Laeliocattleya* × 'Hilary' var. *majestica* (*L.-c.* × 'Soulangé' × *C.* × 'Fabia') (votes 13 for), from Messrs. Cowan, Southgate. Flowers large and of deep rose colour, the labellum having the front lobe dark crimson.

To *Odontonia* × 'Olga' (*Odontonia* × 'Thisbe' × *Odontoglossum crispum*) (votes 12 for, 4 against), from Messrs. Charlesworth, Haywards Heath. Flower white, much like those of the latter parent, but the labellum broad and showing the influence of the *Millonia vexillaria* in the *Odontonia* parent.

Cultural Commendation.

To Mr. E. V. Kent, gr. to Ernest R. Ashton, Esq., for *Masdevallia tovarensis* with 25 flower spikes.

Other Exhibits.

Messrs. Black & Flory, Slough: *Cypripedium* hybrids and *Sophrocattleya* × 'Pearl.'

Robert Paterson, Esq., Ardingly, Sussex: *Odontioda* × 'Cornelia' and *Cypripedium* hybrids.

Dr. Craven Moore, Manchester: *Cypripedium* × 'Nesta II.'

Mrs. Carl Holmes, The Node, Welwyn, Herts.: *Cattleya* × 'Dinah' (A.M. already given).

Messrs. A. J. Keeling, Bradford: *Cypripedium* hybrids.

✓ Messrs. Stuart Low, Jarvis Brook, Sussex: several interesting species.

Messrs. Sutton Bros., Hassocks: various Orchids.

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In the case of books published in London, the place of publication is not named in the entry.

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- Field notes of plants, shrubs and trees, other than rhododendrons, collected by K. W. in 1924-25. sm. 8vo. n.p. [1926.] (16)
- Field notes of the rhododendrons collected by K. W. in 1924-25. sm. 8vo. n.p. [1926.] (16)
- Ward, Lock & Co. [Publishers]. All about gardening. Garden making and maintenance. Illus. 8vo. London and Melbourne [1927]. (2)
- Watson, W. Cactus culture for amateurs. Illus. 8vo. 1903. (27)
- Weaver, John E. Root development of field crops. Illus. 8vo. 1926. (2)
- White, John. An essay on the indigenous grasses of Ireland. Pls. 8vo. Dublin, 1808. (1)
- Wickes, Dean R. Flowers of Peitaiho (Peking Soc. Nat. Hist. Educat. Ser., No. 1). Illus. sm. 8vo. Peking, 1926. (1)
- Wiepking-Jürgensmann, Heinrich Fr. Garten und Haus. I. Das Haus in der Landschaft. Illus. 4to. Berlin, 1927. (2)
- Williams, Frederic Newton. Enumeratio specierum varietatumque generis *Dianthus*. 8vo. 1889. (1)

CXXXVIII PROCEEDINGS OF THE ROYAL HORTICULTURAL SOCIETY.

- Williams, Frederic Newton. Notes on the pinks of Western Europe. 8vo. 1889. (1)
 ——— The pinks of Central Europe. 8vo. 1890. (1)
 ——— Note monographique sur le genre *Rhodalsine* Gay. (Bull. Herb. Boiss. vi.) Pl. 8vo. [Geneva], 1898. (24)
 Wilson, Ernest H. Plant hunting. 2 vols. Pls. 8vo. Boston, 1927. (1)
 Wirsing, Adam Ludwig. See TREW, C. J.
 Wolff, Hermann. Umbelliferae—Apioidcae—Ammineae—Carinae, Ammineae novemjugatae et genuinae. 1927. See ENGLER, A. Das Pflanzenreich. 90.
 Wood, C. Leslie. Transl. See APPEL, OTTO.
 Woodward, Marcus. How to enjoy wild flowers. Col. pls. sm. 8vo. 1927. (2)
 Wright, C. W. B. & Carslaw, R. McG. The economy of a Norfolk fruit farm, 1923-1926 (Cambridge Dept. Agr. Farm Econ. Branch Report, No. 7). 8vo. [Cambridge], 1927. (2)
 Wright, Richardson & Lemmon, Robert S. House and gardens, second book of gardens. Illus. 4to. New York, 1927. (28)
 Wright, Walter P. A book about potatoes and other vegetables. Pls. 8vo. [1917.] (1)
 ——— Roses and rose gardens. 3rd ed. Illus. 8vo. 1927. (2)
 Wye.
 South-Eastern Agricultural College.
 ——— Research and Advisory Dept. Bulletin 5, 6. Illus. 8vo. Ashford, 1927. (23)
 Young, James. Rose growing in New Zealand. Illus. 8vo. Auckland, etc. [1926 ?] (1)

DONORS OF SEEDS, PLANTS, BOOKS, &c., TO THE SOCIETY'S
LABORATORY AND GARDEN AT WISLEY DURING THE YEAR 1927.

- ABOL LTD., Messrs., Paddock Wood. Aboleve Tar Oil Wash for trial.
- ALDERSEY, H., Chester. Narcissi for trial.
- ALLARDICE, A., Bridgnorth. Apple grafts for trial.
- ALLGROVE, J. C., Slough. Grafts of plums for trial.
- ALLWOOD, Messrs., Haywards Heath. 13 Dianthi.
- AMSTERDAM BOTANIC GARDEN, Holland. Collection of seeds.
- APPLETON, G., Northwick. Rhubarb for trial.
- ARENDS, Messrs. G., Ronsdorf. Phlox, Veronicas for trial.
- ARUNDELL, Miss P., Pontefract. Collection of seeds from Ceylon.
- ATLEE BURPEE, Messrs., U.S.A. Maize, Beet, Onions, Cabbage for trial.
- AUTON, W., Pyrford. Fuchsias for trial.
- BAARN BOTANIC GARDEN. Collection of seeds.
- BAILEY, L., New Zealand. Collection of seeds.
- BAKER, F., Yarmouth. Fuchsia for naming.
- BAKER, G. P., Sevenoaks. Collection of seeds; Irises for trial; plants of *Jankaea Heldreichii*, seeds of *Rosa* sp. Kashmir, *Fritillaria graeca*.
- BAKERS, Messrs., Wolverhampton. 2 Trollius, Phlox, Kniphofia for trial.
- BALCOMBE, W., Wokingham. Seed of *Cyclamen europaeum*.
- BALFOUR, A., Slough. Seed of Godetias and Pentstemon.
- BALLEGO, Messrs. G., Leiden. Dahlias for trial.
- BARBIER & Co., Messrs., Orleans. Roses for trial.
- BARR, Messrs., Covent Garden. Seed of Delphinium, Poppies, Onions, Phlox, Cabbage, Daffodils, for trial. Seed of *Momordia Balsamina*.
- BARRON, L., New York. Seed of *Talinum calycinum*.
- BASEL BOTANIC GARDEN, Switzerland. Collection of seeds.
- BATH, Messrs. R. H., Wisbech. Gladioli, Viola, Daffodils for trial.
- BENARY, Messrs., Germany. Onions, Savoys, Cabbages, Fuchsias for trial.
- BENNETT, J. C., British Columbia. Collection of seeds.
- BERLIN-DAHLEM BOTANIC GARDEN. Collection of seeds.
- BERN BOTANIC GARDEN. Collection of seeds.
- BIGGLESTON, Mrs., Canterbury. Bulbs and plants from Uganda.
- BILBY, F. C., N. Zealand. Gladioli for trial.
- BIRKBECK, Miss, London. Seed of *Arctotis* sp. from Cairo.
- BLATHWAYT, G. W. W., West Porlock. Senecio for trial.
- BLISS, Duncan, Johnstone. Beet for trial.
- BLISS, A. J., Tavistock. Gladioli, Daffodils for trial.
- BOND, C. G. O., Farnham. Plants of sweet scented Pelargonium.
- BONN BOTANIC GARDEN. Collection of seeds.
- BOTANIC GARDEN, LYON, France. Collection of seeds.
- BOTANIC GARDEN, Ville de Nantes, France. Collection of seeds.
- BOTTLE, E., Shepherds Bush. Collection of seeds.
- BOWDEN, W., Sierra Leone. Seed of *Thunbergia chrysops*.
- BOWLES, E. A., Waltham Cross. Cowslip, *Anemone nemorosa*, *Mertensia paniculata*, *Muscari* sp. from Salonika; Irises for trial.
- BREMEN BOTANIC GARDEN. Collection of seeds.
- BRISTOL BOTANIC GARDEN. Collection of seeds.
- BROADHEAD, F., Canada. Dahlia for trial.
- BROOKLYN BOTANIC GARDEN, New York. Collection of seeds.
- BROWN, J., Cirencester. Parsley for trial.
- BROWNING, J. W., Reading. Tomato Seedling for trial.
- BRUIDEGOM, Messrs. D., Holland. Dahlia for trial.
- BRYAN, Miss, Whitchurch. Plant of *Anemone coronaria*.
- BUDAPEST BOTANIC GARDEN. Collection of seeds.
- BULLOCK, Mr., Epping. Plant of *Silphium terebintheaceum*.
- BUNYARD, G., Maidstone. Crocus corms.
- BURRELL, Messrs. J. Dahlias for trial.
- BURTON, F., Hildenborough. Iris for trial.
- BUTLER, A. F., Honduras. Seed of *Clerodendrom squamatum*, *Clitoria ternata*, *Mimosa pudica*, *Passiflora* sp., *Aristolochia* sp., *A. elegans*.
- BUTTON, C., Upminster. Seed of *Gentiana*, *Rosa*, and *Laburnum*; seedlings for identification.

cxl PROCEEDINGS OF THE ROYAL HORTICULTURAL SOCIETY.

- BYNG OF VIMY, Lady, Thorpe-le-Soken. Collection of seeds.
 CAMBRIDGE BOTANIC GARDEN. Collection of seeds.
 CAMPBELL, A., Harrogate. Irises for trial.
 CAMPBELL, D., Regent's Park. Plants of Hollyhock 'Palling Belle.'
 CAMPBELL, H., Cyprus. Seeds from Capri and the Philippines.
 CARLEY, Messrs. H., Holland. Dahlia for trial.
 CARPENTER, G., Byfleet. Fuchsias for trial.
 CARTER & Co., Messrs., London. Scions of Apple, Onions, Cabbages, Lachenalias, for trial.
 CARTER PAGE & Co., Messrs., London. Fuchsias for trial.
 CASTLE NURSERIES, LTD., Messrs. The, Chingford. Fuchsias for trial.
 CENTRAL EXPERIMENTAL FARM, Ottawa. Seed of *Lilium concolor*, *Caragana pygmaea*; sweet corn for trial.
 CERNAUTI BOTANIC GARDEN, Roumania. Collection of seeds.
 CHAPLIN, Mrs. A., London. Seed of *Leucodendron argenteum*.
 CHARRINGTON, J., Shenley Grange. Seeds of *Pinus ponderosa*, *P. Strobus*, *Sequoia sempervirens*, *Pseudotsuga taxifolia*.
 CHEAL & SONS, Messrs. J., Crawley. Grafts of Apple, Fuchsias, Dahlias, for trial.
 CHELSEA PHYSIC GARDEN. Collection of seeds.
 CHRISTY, E. M., Emsworth. Aubrietias for trial.
 CHURCHER, Major G., Haywards Heath. Gladioli, Daffodils, for trial.
 CLARKE, Colonel Stephenson. Seed of *Garrya elliptica*.
 CLIBRANS, Messrs., Altrincham. Cabbage for trial.
 CLUCAS, Messrs. J. L., Ormskirk. Peas, Parsley, Beet, Cabbages, for trial.
 COBB, A. J., Reading. Dahlias for trial.
 COIMBRA BOTANIC GARDEN, Portugal. Collection of seeds.
 COLLIER, W., Redbourn. Veronica for trial.
 COOPER, TABER & Co., Messrs., London. Peas, Parsley, Beet, Onions, Cabbage, for trial.
 COPENHAGEN BOTANIC GARDEN. Seed of *Begonia socotrana*. Collection of seeds.
 CORY, R., Cardiff. Fuchsias for trial.
 COX, P., Bromley. Plant Labels for trial.
 CRANE, M. B., Merton. Raspberry for trial.
 CRANFIELD, W. B., Enfield Chase. Collection of Ferns; Shirley Foxgloves; crowns of *Lastrea montana* and *L. plumosa*.
 CRAVEN & Co., Messrs., Evesham. "Amberene," "Biosol," "Cypriole Dry Spray," "Belumnite," "M. F. Dusting Powder," "Special Powder 3 A.B." for trial.
 CRESSWELL, Mrs., Ewhurst. Seeds and plant of *Polemonium* sp., from Kashmir, Anemone.
 CULLEN, Messrs. T., Witham. Pea, Onion, Parsley, Beet, Cabbage for trial.
 CUTBUSH, Messrs., Barnet. Rhubarb for trial.
 DAENFELDT & JENSEN, Messrs., Denmark. Cabbages for trial.
 DALRYMPLE, G. H., Southampton. Seeds and plants of *Primula pulverulenta*.
 DANIELS BROS., Messrs., Norwich. Cabbage, Onion, for trial.
 DARMSTADT BOTANIC GARDENS. Collection of seeds.
 DAVIDSON, Professor J. V., British Columbia. Collection of seeds.
 DAIVSON, G., Norwich. Black Currants for trial.
 DAWKINS, Messrs. A., Chelsea. Poppies, Sweet Sultan, Parsley, Onion, Indian Corn for trial.
 DENT, SONS & Co., Messrs. "Kilangro" for trial.
 DEW, A. A., Coalville. Pea for trial.
 DICKS & Co., Messrs. F., Manchester. Cabbage for trial.
 DICKSON & SONS, Messrs. A., Belfast. Beans, Cabbage for trial.
 DICKSON & ROBINSON, Messrs., Manchester. Beans, Cabbage, for trial.
 DIRECTOR, THE, Botanical Survey of India. Collection of seeds.
 DIVERS, W. H., Hook. *Pelargonium Clorinda*.
 DOBBIE & Co., Messrs., Edinburgh. Peas, Onions, Parsley, Beet, Sweet Corn, Poppies, Sweet Sultan, Centaureas, Gladioli, Fuchsias, Cabbages, Daffodil, for trial; Violas and Pansy plants.
 DORPAT BOTANIC GARDEN. Collection of seeds.
 DOUGLAS, J., Gt. Bookham. Plant of Auricula.
 DUNEDIN BOTANIC GARDEN, New Zealand. Collection of seeds.
 DUVAL, Rev. Seed of *Piptanhus nepalensis*, *Staphylea* sp.
 DYKES, Mrs., Guildford. Iris for trial.
 EDMISTON, N. *Oxalis* sp., from Kashmir.
 ELEY, C., Colchester. *Juniper* sp. from Bonin Island.

- ELLIOTT, C., Illinois. Gladioli for trial.
 ENGLAND, E., Barnet. Narcissus for trial.
 EVERITT, Major., U.S.A. Plants of *Gordonia* sp.
 EVERITT, Mrs., Dulwich Common. Seeds from Sierra Leone.
 FENTIMAN, W., Cranbrook. Seed of *Araucaria imbricata*, *Genista scorpius*.
 FIDLER, Messrs., Reading. Cabbage for trial.
 FINNEYS, Messrs., Newcastle. Cabbages for trial.
 FLORENCE BOTANIC GARDEN. Collection of seeds.
 FORBES, Messrs. J., Hawick. Fuchsias, Veronicas, for trial.
 FRASER, J., Kew. Plant of *Salix pentandra*, *Salix* sp.
 FREIBURG BOTANIC GARDEN. Collection of seeds.
 FRYER, Messrs. W. E., U.S.A. Iris for trial.
 GAISFORD & SON, Messrs. E. G., Colerne. Carnation for trial.
 GAVIN JONES, Colonel, Letchworth. Six Primulas.
 GEMMELL, J., Kilwinning. Seed of *Trientalis europaea*, *Saxifraga stellaris*.
 GIBBS, Hon. Vicary, Elstree. Collection of seeds.
 GILBERT, H., U.S.A. Seed of *Dahlia Maxonii*.
 GILCHRIST, A., Toronto. Seed of Gentian.
 GIUSEPPI, Dr., Felixstowe. Plant of *Jankaea Heldreichii*.
 GLASGOW BOTANIC GARDEN. Collection of seeds.
 GLASNEVIN BOTANIC GARDEN, Dublin. Collection of seeds.
 GLEN ROAD IRIS GARDENS, U.S.A. Iris for trial.
 GORE BOOTH, Sir JOSSLYN. Two Saxifragas.
 GOTENBURG BOTANIC GARDEN. Collection of seeds.
 GÖTTINGEN BOTANIC GARDEN. Collection of seeds.
 GOULD, N. K., Ripley. *Jasminum nudiflorum*, *Aconitum Napellus bicolor*,
Helenium Bolanderi.
 GRIDDALE, Mrs., Feltham Hill. Iris 'Mrs. Griddale.'
 GRÖNINGEN BOTANIC GARDEN. Collection of seeds.
 GRULLEMANS & SONS, Messrs., Holland. Gladioli for trial.
 HAARER, A. E. Seed of *Ipomoea* sp., from Tanganyika.
 HADDON, N. G., Porlock. Miscellaneous seeds.
 HALL, A. J., Harrogate. *Saxifraga longifolia*.
 HAMBURG BOTANIC GARDEN. Collection of seeds.
 HANBURY, C., La Mortola. Seed of *Nandina domestica*.
 HARRISON & SONS, Messrs., Leicester. Peas, Onions, Cabbage for trial.
 HARVARD UNIVERSITY, U.S.A. Collection of seeds.
 HAWKER, Capt. H. G., Ermington. Narcissus for trial; bulbs of *Iris tuberosa*.
 HAWKINS, F., Bristol. Black Currant for trial.
 HAY, T., Hyde Park, London. Plants of *Erythrina crista galli*. Collection of
 seeds. Cuttings of *Salvia* Harbinger; two plants of *Galanthus*; seed of
Fremontia mexicana.
 HERB, M., Naples. Sweet Sultan, Onions, Parsley for trial.
 HEWITT & Co., Messrs., Solihull. Gladioli for trial.
 HEINEMANN, F. C., Germany. Poppies, Onions, Beet, Parsley, for trial.
 HEMSLEY, H., Crawley. Phlox for trial.
 HILTON, C. F., British Columbia. Collection of seeds; Daffodils for trial.
 HOLDER HARRIDEN LTD., Messrs., London. Spraying outfit for trial.
 HOLMES, W. G., Tairn. Peas, Cabbage for trial.
 HOOPER, C. H., Wye. 3 volumes C.G.A. Estate Book for Library; Seed of
 yellow composite.
 HOPKINS, F. B., Physgill. *Leptospermum* cuttings.
 HORUSVELD, Messrs. H., Holland. Dahlia for trial.
 HOWE, Prof., New York. *Dahlia Maxonii*.
 HUDSON, W. H., London. Seed of *Lilium regale* from New Zealand.
 HUGHES, Mrs. A., Reigate. Seed of Costamundra Wattle.
 HUMPHREY, Capt. G., London. Seeds from Mt. Ruwenzori.
 HURST & SONS, Messrs., London. Onions, Beet, Parsley, Peas, Cabbages, for
 trial.
 INGRAM, C. Apple trees for trial of Danish and Swedish origin.
 INGWERSON, W., Sharpthorne. Collection of seeds.
 IRELAND & HITCHCOCK, Messrs., Marks Tey. Onion, Parsley, for trial.
 JARMAN & Co., Messrs., Chard. Dahlias for trial.
 JASSY BOTANIC GARDEN, Roumania. Miscellaneous seeds.
 JEKYLL, Miss, Godalming. Plants of *Clematis paniculata*.
 JENKIN, Dr., Hindhead. Seeds and plants.
 JOHNS, W., London. Dahlia for trial.
 JOHNSON, Messrs. W. W., Boston. Beet, Parsley, Onion, Peas, Cabbages for
 trial.

cxlii PROCEEDINGS OF THE ROYAL HORTICULTURAL SOCIETY.

- JONES, H. J., Lewisham. Fuchsias for trial.
 KEENE, R., Oatlands. Plant of *Arum Dracunculius*.
 KELWAY & SONS, Messrs., Langport. Delphiniums, Peas, Beet, Parsley, Onions, Rhubarb, Gladioli, Cabbages, for trial.
 KENFORD, Messrs., London. Colloidal Sulphur, and Nicotine substitute for trial.
 KENNEDY, Mrs. Watson, Cley-next-Sea. Geraniums for naming.
 KENT, Mrs. P., Africa. Seed of *Sutherlandia frutescens*.
 KEW BOTANIC GARDEN. Collection of seeds.
 KING CHURCH, L. A., Albury. Bulbs from Gold Coast.
 KIRCH, C., Beckenham. Plants of *Grevillea alpina*.
 KITCHIN, Lt.-Col., Guernsey. Daffodils for trial.
 KONYENBURG & MARK, Messrs., Holland. Gladioli, for trial.
 KROON, Messrs. C., Holland. Dahlias for trial.
 LADHAMS, Messrs. B., Southampton. Trollius, Tritomas, for trial.
 LAMBOURNE, The Rt. Hon. Lord, London. 9 Arum Lilies.
 LANGWORTHY, C., Claygate. Fuchsias for trial.
 LAWRENCE, Sir Wm., Dorking. Fuchsias for trial; *Saxifraga oppositifolia*; seed of Artichoke for trial.
 LAWSON, E. D., London. *Lithospermum prostratum* for cuttings.
 LAWTON, H. W., New Zealand. Seed of *Carmichaelia Williamsii*, *Notospartium Carmichaelia*, *N. torulosum*, *Wahlenbergia gracilis*.
 LAXTON BROS., Bedford. Nuts, Rhubarb, Apple and Pear for trial.
 LEES, A. D., Shrewsbury. Grafts of Apple "Catshead Codlin."
 LEIDEN BOTANIC GARDEN. Collection of seeds.
 LENINGRAD BOTANIC GARDEN. Collection of seeds.
 LODER, G. W. E., Ardingly. Cuttings of *Salix Bockii*, *Cupressus nuthana*, *Picea*, *Phytolacca clavifera*.
 LOFTHOUSE, Mr., Middlesbrough. Seedling of *Primula intricata*.
 LOMAS, F., Old Chilwell. Plants of *Statice latifolia* 'Chilwell' var.
 LONG, E., India. Seed of *Cypripedium* sp.
 LYNN, W., Wisbech. Apple seedling.
 LYPTOL LTD., Messrs., Harrow. Tin of "Lypticide" for trial.
 MADRID BOTANIC GARDEN. Collection of seeds.
 MAGOR, E., St. Tudy. Seedlings of *Rhododendron Valentianum*, *Rhododendron* 254988, *Mutisia Ulicifolia*, *Venidia Wylei*, *Rhododendron*, K.W. 6333.
 MAJOOR, Messrs. P., Holland. Dahlia for trial.
 MALTBY, G. C., Evesham. Apple.
 MARSDEN JONES, E., Devizes. Seed of *Scilla verna*.
 MANGER, Messrs., Guernsey. Lachenalias for trial.
 MAW, Miss, Merstham. Viola sport for trial.
 McLAREN, Hon. H. D., Tal-y-Cafn. Collection of *Rhododendron* species.
 MERCER, C., Cobham. Vines from Switzerland.
 MESSEL, Lieut.-Colonel, Handcross. Seeds of *Lilium Duchastrei* var. *Farreri*, *Eucryphia Nymansay*.
 MILFORD, Mrs., Chedworth. *Primula* sp.
 MILLARD, F. E., Grinstead. Collection of seeds.
 MONTPELLIER JARDIN DES PLANTES. Collection of seeds.
 MOORN, G., Waltham Cross. Volck for trial.
 MORGAN, J. C., Montreal. Iris for trial.
 MORRIS, Messrs. R., Birmingham. Onions, Beet, Gladioli, for trial.
 MORSE, C. C., U.S.A. Peas, Onions for trial.
 MOSCOW BOTANIC GARDEN. Collection of seeds.
 MOWLL, Dr., Surbiton. Seeds from Central Africa.
 MUNICH BOTANIC GARDEN. Collection of seeds.
 MUSGRAVE, C. T., Godalming. Collection of seeds; Plant of *Lathyrus pubescens*.
 NATURAL HISTORY MUSEUM, Paris. Collection of seeds.
 NEWELL, Rev. E. J., Godalming. Books for library.
 NEWLANDS BOTANIC GARDEN, Kirstenbosch, C.P. Collection of seeds.
 NEW YORK BOTANIC GARDEN. Collection of seeds.
 NEW ZEALAND ALPINE AND ROCK GARDEN SOCIETY. Collection of seeds; seed of *Pittosporum Dallii*, *Notospartium Carmichaelia*.
 NIEWENHUIS, D., Lisse. Gladioli for trial.
 NIX, A. P., Truro. Plants and cuttings of Pelargoniums.
 NIX, C. G. A., Crawley. Seed of *Davidia involucreata*.
 NOTCUTT, R. C., Woodbridge. Kniphofia for trial.
 NUNHEM, Messrs. Limburg. Beet, Onions, Peas, Parsley for trial.
 NUTTING, Messrs., London. Peas, Onions, Parsley, Beet, Cabbages for trial.
 OLIVER & HUNTER, Messrs., Moniaive. Plants of *Myosotis rupicola*.

- OLSEN, CHR., Odense. Peas, Onions, Beet, Parsley, Cabbage, for trial.
- ONTARIO FORESTRY BRANCH, Parliament Buildings, Toronto. Collection of seeds.
- ORAM, Mrs., Worcester. Dahlia for trial.
- ORPINGTON NURSERY CO., THE, Kent. Iris, Gladioli for trial.
- OSLO BOTANIC GARDEN. Collection of seeds.
- OUDEM, Messrs. H. DEN, Holland. Veronics for trial.
- OXFORD BOTANIC GARDEN. Collection of seeds.
- PARKER, Mr., London. Six *Eriobotrya japonica*.
- PASSEY, C., Worcester. Grafts of Apple for trial.
- PENNELL & SONS, Messrs., Lincoln. Poppy, Cabbage for trial.
- PERRY, A., Enfield. Seed of *Thalictrum adiantifolium*, *Polystichum acrostichioides*; bulbs of *Lilium sulphureum*, *L. neilgherrense*; *Nymphaea pygmaea*, *N. helvola alba*; seed of White Daisy from Mount Meinwell, Africa; Kniphofias for trial; *Iris minuta*, *I. gracilipes*; bulbs of *L. longiflorum*; collection of plants.
- PETERS & SON, Messrs., Leatherhead. Onion for trial.
- PRITZER, W., Stuttgart. Onion for trial.
- PILKINGTON, G. L., Liverpool. Iris for trial.
- POLACK, A. J. R., Africa. Seed of *Adenium oleifolium*.
- PRICHARD, M., Christchurch. Kniphofia for trial.
- PRINCE, G., Oxford. Twelve roses, unnamed variety for trial.
- PRIUS, Messrs. H., Lisse. Gladioli for trial.
- REDHEAD, J. B. M., Cheltenham. Seed of *Arthropodium cirrhatum*.
- RILEY, J., Hook. Seedlings of *Alyssum Wulfenianum*.
- RILEY, L., Basingstoke. Seedlings of *Limonium binervosum*, *Teucrium Scordium*.
- RIVOIRE, PÈRE & FILS, Messrs., France. Onion, Beet, Cabbage for trial.
- ROBINSON, F. C. S., Collection of plants from the Dolomites.
- ROBINSON, W., Garstang. Pea for trial.
- ROME BOTANIC GARDEN. Collection of seeds.
- ROOZEN, AUT., Holland. Veronics for trial.
- ROTHSCHILD, L. Seeds from Kingdon Ward Expedition.
- SALBACH, C., California. Gladioli for trial.
- SALMON, Mr. C. E., Reigate. *Ajuga genevensis*, *Alchemilla pastoralis*.
- SANDBACH, C., California. Iris for trial.
- SCARLETT, J. W., Musselburgh. Cabbage for trial.
- SEABROOK & SONS, Messrs., Chelmsford. Black currant 'Hill Top Baldwin' for trial.
- SECRET, F. A., Twickenham. Narcissi for trial.
- SEWELL, A. J., Weybridge. Seed of Manuka.
- SHOESMITH, H., Woking. Dahlias for trial.
- SILCOCK, H., Southampton. Plants of *Vaccinium Mortinia*.
- SIMPSON, Messrs. W. H., Birmingham. Sweet Sultan, Poppy, Parsley, Sweet Corn, Beet, Peas, Onions, Cabbages for trial.
- SKELTON, R. T., British Columbia. Seed of unknown plants; seed of *Ranunculus*.
- SMILES, T., Maidstone. Strawberry for trials.
- SMURTHWAITE BROS., Messrs., North Shields. Cabbage for trial.
- SNELL, J., Cornwall. Raspberries for trial.
- SOLIGNUM, LTD., Messrs., London. Agrisol A wash for trial.
- SOWMAN, A. J., Preston. Apple trees for trial.
- SPEED, H. J., Evesham. Peas, Beet, Parsley, Cabbages, Onions for trial.
- SINKS, Messrs., Bristol. Blackberry seedling for trial.
- SPRENGER, Professor, Wageningen. Brussel sprouts for trial.
- STANLEY, Lady BEATRIX, Market Harborough. *Nerine* bulbs.
- STANSFIELD, Dr. W. D., Southport. *Pyrola rotundifolia* var. *maritima*.
- STARK, G., Ryburgh. Plant of *Sidalcea* 'Jewel.'
- STARK & SON, Messrs., Fakenham. Poppies for trial.
- STEVENS, H., Wye. Cherry tree for trial.
- STEVENS & SON, Messrs., Sidmouth. Graft of Apple 'Woolbrook Pippin' for trial.
- STOCKHOLM BOTANIC GARDEN. Collection of seeds.
- STREDWICK, J., St. Leonards. Dahlias for trial.
- STRONGE, Miss J., Co. Armagh. Primroses of various types.
- STUART & MEIN, Messrs., Kelso. Beet, Parsley, Cabbages, Onions for trial.
- STUTTGART BOTANIC GARDEN, Germany. Collection of seeds.
- TAYLOR, Miss M. C., Reigate. Phlox for trial.
- TELFER, A. E. C., Kidderminster. Saxifragas.
- THEKILDSEN, F., Southport. Seeds of *Phlox maculata*, *Parnassia palustris*, *Pyrola rotundifolia*, *Fuchsia* 'Tom Thumb.'

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- THOLEN, Messrs., Holland. Tulips for trial.
- THOMPSON, Mrs., Weybridge. Books for Library. Plants of *Iris unguicularis* (Greek form).
- TIMOTHY & SANDWICH, Messrs., Bracknell. Niagara Blower Machine for trial.
- TODD, Colonel, London. Seed of *Viola arborescens*, *V. blanda*, *V. altaica*, *V. pubescens*, *V. palmata*; *Campanula lanata*, *Achillea tagetes*; four *Violas*.
- TORKINGTON, Mrs. *Saxifraga lingulata lantoscana*, *S. lingulata Bellardii*, *Lathyrus pubescens*, *Echinops ritro nana*, *Lilium philipense* (Price's var.), *L. pomponium*.
- TOWNSEND, G. H., Vancouver. Seed of *Salvia*; *Meconopsis rigidiuscula*, *M. integrifolia*.
- TRESEDER, Messrs., Cardiff. Dahlias for trial.
- TRINITY COLLEGE BOTANIC GARDEN, Dublin. Collection of seeds.
- TROTTER, R. D., Ockley. Seed of *Eriphorum polystichum*; *Berberis Darwini coccinea*; *Iris* roots.
- TROUP, Captain R. D. R., Dorchester. *Iris* for trial.
- TUBERGEN, C. G. VAN. Daffodils for trial.
- TURNER, C., Slough. Dahlias for trial.
- UNWIN, Messrs. W. J., Histon. Gladioli, Dahlias, Onions for trial.
- UTRECHT BOTANIC GARDENS. Collection of seeds.
- VAN BOURGONDIE, Messrs., Holland. Dahlias for trial.
- VAN DER KLOOT, Messrs. A., Holland. Dahlia.
- VAN DE WEYER, Mr. Seed of *Craterostigma plumbaginoides*.
- VEITCH, Messrs. R., Exeter. *Echium pinnatum callithyrsum*; Poppies, Sweet Sultan, Parsley, Peas, Beet, Onion, Sweet Corn, Fuchsias for trial.
- VEITCH, P. C. M., Exeter. Trees of Apple 'Opalescent.'
- VIENNA BOTANIC GARDEN. Collection of seeds.
- VILMORIN ANDRIEUX, Messrs., France. Collection of seeds.
- VOSS, Messrs. W., London. Insecticides for trial.
- WACHER, Dr., Canterbury. Seed of *Anomothea cruenta*.
- WAGENINGEN LANDBOUND-HOOGESCHOOL. Collection of seeds.
- WALEY, F. R., Havertree. *Primula scotica*.
- WALKER, Mrs., Cobham. Tree of 'Ake Ake' (*Pittosporum*).
- WALLER-FRANKLIN SEED CO., THE, California. Poppies, Centaurea, Lupins, Asters, for trial.
- WALLIS, R. J., Merriott. Seedling Peach for trial.
- WARBURG, Sir OSCAR, Headley. Cuttings of miscellaneous plants; seed of *Quercus glandulifera*; collection of seeds.
- WARREN, Messrs. H. F., Southampton. Spray for trial.
- WARSAW BOTANIC GARDEN. Collection of seeds.
- WATERER, Miss, Long Rock. Seed of *Gentiana nivalis*.
- WATKIN, Lady, London. Seed of South African *Glancium*.
- WATKINS & SIMPSON, Messrs., Covent Garden. Seed of Sweet Sultans, Poppies, Peas, Cabbage, Onions, Parsley, Sweet Corn, Beet, for trial; plants of *Viola*.
- WATTS, W. A., St. Asaph. Daffodils for trial.
- WEBB & SONS, Messrs. E., Stourbridge. Onions, Peas, Beet, Parsley, Gladioli, for trial.
- WHEELERS, LTD., Messrs., Warminster. Peas, Onion, Beet, for trial.
- WILLIAMS, Dr. A. H., Horsham. Collection of seeds; seed of *Solanum aviculare*, *Rosa cerasocarpa*.
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- WILLIAMS, P. D., St. Keverne. Narcissi for trial.
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- WILSON, E. H., U.S.A. Collection of plants.
- WILSON, G. L., Co. Antrim. Daffodils for trial.
- WITTING, Bros., Messrs., London. Vioray Glass for trial.
- WOOD, F., Hayes. Pea for trial.
- WRAY, C., Hindhead. Plants of *Saxifraga* and *Sempervivums*.
- WYNDHAM, Major, Bicester. Melon for trial.
- YATES & SONS, Messrs., Evesham. Gladioli, Onions, Cabbages, for trial.
- ZAGREB BOTANIC GARDEN. Collection of seeds.
- ZANTEN, Messrs. C. & A. VAN, Holland. Gladioli for trial.
- ZURICH BOTANIC GARDEN. Collection of seeds.
- ZWAAN & DE WILJES, Messrs., Holland. Parsley, Beet, Peas, Cabbages, Onions, for trial.
- ZWAAN & VAN DER MOLEN, Messrs., Holland. Parsley, Peas, Beet, Onions, for trial.

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13. Corry's Ant and Woodlice Death, from Messrs. Corry, Shad Thames, E.C.

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